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DECEMBER 11TH, 1877.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

Dr. JAMES F. N. WISE, of Ireland was announced as a member.

The following presents to the Library were announced, and thanks were ordered to be returned to the respective donors for the same.

FOR THE LIBRARY.

From the HOME DEPARTMENT OF THE GOVERNMENT OF INDIA.—Grammar of the Róng (Lepcha) Language. By Col. G. B. Mainwaring.

From the EDITOR.—*Révue Scientifique*, Nos. 22 and 23, 1877.

From the ACADEMY.—*Bulletin de l'Académie Impériale des Sciences de St. Petersbourg*. Vol. XXIV, No. 2.

From the AUTHOR.—The Census of Massachusetts, 3 Vols. 1875; A Compendium of the Census of Massachusetts, 1875. By C. D. Wright.

From the INSTITUTION.—Report of the Smithsonian Institution for 1876.

From the ASSOCIATION.—Proceedings of the American Association for the Advancement of Science. Vol. XXV, 1876.

From Prof. F. V. HAYDEN, Hon. M.A.I.—Ninth Annual Report of the U.S. Geological and Geographical Survey of the Territories; Bulletin ditto; Supplement to the Fifth Annual Report ditto; Bulletin of the U.S. Entomological Commission, Nos. 1 and 2; The Fur-bearing Animals. By E. Cones.

From the AUTHORS.—British Barrows. By Canon Greenwell, and Prof. Rolleston.

From the AUTHOR.—Journal of a Visit to India, and the East. By James McClelland.

From the EDITOR.—“Nature,” to date.

Mr. WORTHINGTON G. SMITH exhibited some Camera Lucida views of Antiquities in Wales, and some worked flints from Maiden Bower.

Mr. A. J. JUKES BROWNE exhibited a collection of flint flakes, arrow-heads, &c., from Egypt.

A paper by Mr. A. J. JUKES BROWNE, on the above objects from Egypt, was then read by the Director.

On some FLINT IMPLEMENTS from EGYPT. By A. J. JUKES BROWNE, B.A., F.G.S.

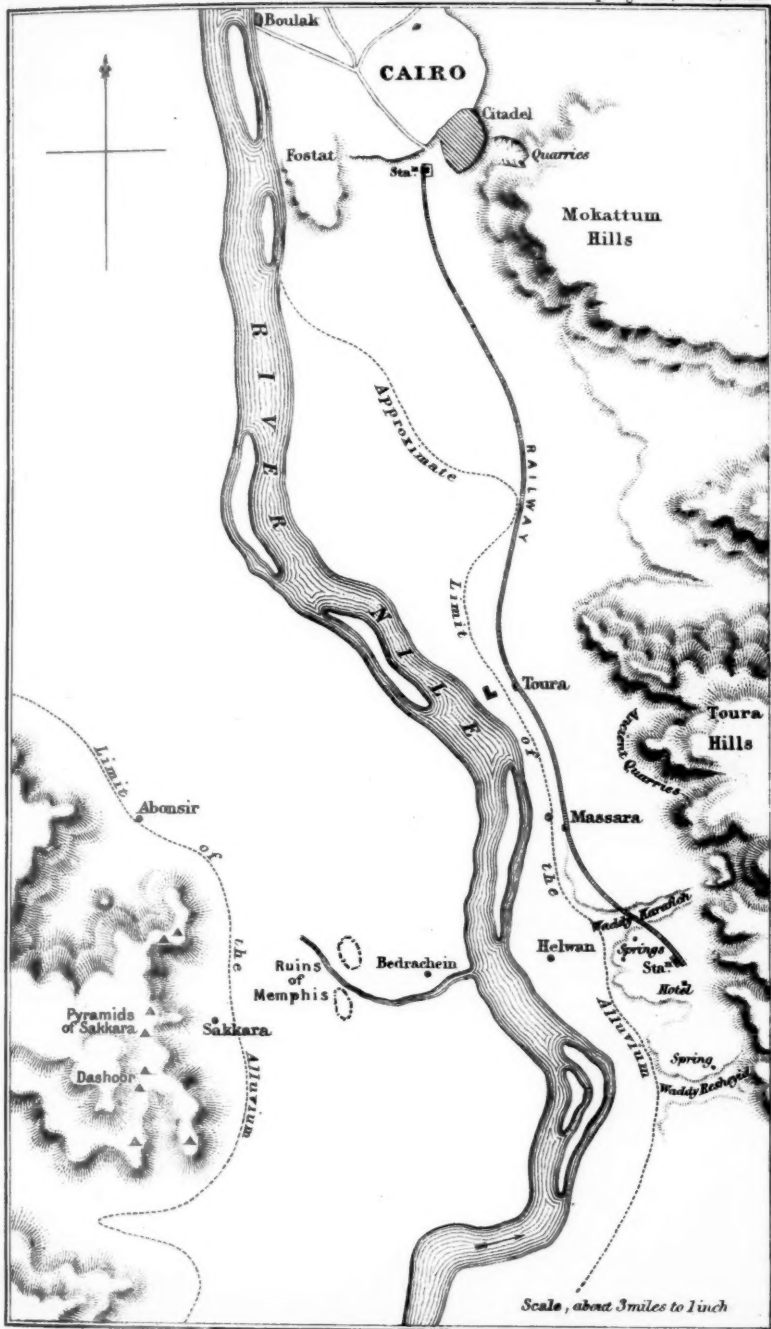
THE flints which form the subject of the present communication were found near Helwan, a village situated on the east bank of the Nile, about fifteen miles south of Cairo.

It is thus described by Dr. W. Reil in his pamphlet on “The Thermal Waters of Helwan:” “At a distance of about four hours from Cairo, the village of Helouan, or Helwan, is romantically hidden in an extensive grove of date palms on the right bank of the Nile. The sulphur springs are situated at a distance of two and a half miles from the village towards the east, at an elevation of 110 feet above the average level of the waters of the Nile, and lie at the foot of the Toura hills, a continuation of the Mokattam range near Cairo, and a part of the Arabian chain.

“The plateau of Helwan is about three miles long from north to south, and two miles wide. It is bounded on the east by the barren and broken mountains of the Arabian chain, which rise to a height of 700 or 800 feet; westwards the plateau descends in a gentle slope to the cultivated plain which is fertilized by the alluvial deposit of the Nile.

“A waddy or valley, called the *Waddy Karafich*, on the north towards Cairo, and another larger and greener on the south, the *Waddy-el-Reshayid*, form the northern and southern limits of the plateau, which is divided into two nearly equal parts by a third valley, the *Waddy Nahkleh*, or *valley of the date palms*, which coming from the mountains passes down in front of the principal spring.”

This was written in 1874, and since then the sanatorial settlement near the sulphur springs has rapidly increased: the gardens of the hotel now occupy part of the *Waddy Nahkleh*, but the two old palms from which it takes its name are still standing.



Moreover, at the beginning of this year (1877) a line of railway was opened from Cairo, bringing Helwan within an hour's journey of the capital (*see map*). This railway is carried along the edge of the cultivated plain as far as Mahsara, whence a considerable incline leads up to the elevated plateau, on which the springs occur, and on the surface of which the flint implements are found. It will be desirable therefore to describe the physical geography of the district a little more fully, and to indicate the relation which this plateau bears to the valley of the Nile.

PART I.—ORIGIN AND STRUCTURE OF THE PLATEAU.

THE line of cliff-like mountains bounding the eastern side of the Nile valley is known by the name of the Arabian chain; its continuity is broken about four miles south of Cairo by a wide valley, which divides the range into two *massifs*; that to the northward and in the immediate vicinity of Cairo being called the Jebel Mokattam, and that to the south the Jebel Toura, from a village of that name. It is the continuation of this latter range which forms the hills behind Helwan; near Mahsara they attain a great height (possibly 8,800 feet), but from this point the beds appear to dip slightly towards the south, and slope away in successive ridges of a much less altitude. At the same time they become furrowed by numerous deep watercourses and ravines, the form and sculpturing of which plainly indicate the agencies to which they owe their origin.

The marks of running streams are here exhibited as clearly as the tool-marks of the ancient Egyptians on the walls of their quarries, and the hill-sides are as deeply graven as in our most bleak and rugged English counties. Egypt does not by any means possess a perfectly rainless climate; showers are not infrequent in winter, and the surface being entirely unprotected by any kind of vegetation, the soluble limestone rock is exposed to the full action of the atmosphere, and every little rain-shower takes effect in loosening the stones and washing down the sand. Occasionally, moreover, once in every two or three years perhaps, heavy rains occur and torrents of water descend, sweeping down the valleys, carrying away the loosened blocks, and spreading the débris over the plain below.

The result of this action has been the production of deep trough-shaped valleys through the hills, and the formation of a wide terrace-like plateau stretching out between the line of cliffs and the alluvial plain, the depth and width of the detritus spread out over this plateau giving very nearly an accurate

measure of the amount of material thus brought down from the hills above; its average width is about three miles, but the thickness of the detritus varies greatly, as I shall presently show.

The most remarkable valley is that of the Waddy Houf, which forms a deep and magnificent gorge through the hills near the centre of the low anticlinal before mentioned, and making a fine curve round the most elevated portion of the range, debouches on the plain three or four miles S.S.E. of Helwan.

The Waddy Karafich, before noticed as forming the southern limit of the Helwan portion of the plateau, leads up into a shorter ravine which has been gradually cut backwards till it has broken through into the Waddy Houf at a point in the western wall of the aforesaid curve; a limit is thus set to its further extension eastward, though several tributary water-courses come in from the north-east.

The Waddy Nahkleh is also the continuation of another remarkable valley, descending from the higher platforms of the hills by a succession of steps or falls, which are of course converted into waterfalls after heavy rains.

Several other valleys likewise converge into the Waddy-el-Reshayid, which crosses the plain to the south of Helwan.

Passing now to a consideration of this plateau upon which the hill valleys open, and over which the transported material is spread out, it is important to note that the valley bottoms seem to be continued beyond the base of the cliffs and under the débris of the plain, and that bare rock sometimes lies close to the surface between the shallow waddies or along their sides.

Hence it is evident that the plateau is not altogether an encroachment on the alluvium of the Nile valley, though this probably is the case on its extreme outskirts. Quarries, however, have long been worked both at Toura and Helwan in solid limestone rock below the surface accumulations.

At Toura open sections showed 7 or 8 feet of angular débris and sand, underlaid by 3 or 4 feet of hardened mud, this latter resting on an uneven surface of limestone, which near the railway appeared to be only a foot or two above the level of high Nile, and sloped gradually up towards the cliffs.

Deep exposures are also afforded by the excavations which have been made to construct the railway embankment across the Waddy Karafich; one of these exhibited beds of clay, sand and pebbles, to a depth of 16 feet, without reaching the rock below. But in the railway cutting between this point and the Helwan station, the solid rock is shown in section emerging from under these deposits, and this is found to be part of a limestone ridge which projects out from the base of the cliffs,

and finally sinks westward under the *débris* of the plain; strata of clay and sand are seen to be banked up against it on the north, while southwards it slopes under beds of sand into the Waddy Nahkleh. I looked carefully for flint implements, but could discover none in these deposits.

Dr. Reil states that in the various wells and borings made hereabout the deposits were generally found to occur in the following order.

- | | |
|-----------------------------------|------------------|
| 1. Débris from the mountains with | } 10 to 20 feet. |
| beds of salt and gypsum .. | |
| 2. Blue and yellow sands .. | |
| 3. Clayey sand and clay.. | .. |

Limestone again rises to the surface on the south bank of the Waddy Nahkleh, covered only by a few feet of angular *débris*.

From these facts it would appear that the channels in the rocky surface underlying the sandy plateau, are not parallel to the direction of the Nile valley, but run at right angles to this from the hills towards the river.

Consequently the plateau cannot be considered as a river terrace, to which at first sight it bears some resemblance, but must be looked upon as a *débris*-covered 'scar' from which the cliffs have receded; and it is clear that this recession of the Arabian chain has been brought about by the continued action of rain and rivulets, operating upon the cliff line originally produced by river erosion.

The actual extent of this projecting foot or scar I did not accurately determine, but its average width is probably not more than a mile or a mile and a half, the transported materials having been pushed out beyond it, so as to encroach upon and overlap the alluvial deposit of the Nile.

The width of rock exposed, would of course measure the recession of the cliff line, were it possible to fix the rate of retrogression, but it would be useless to attempt this, since the rainfall may have been much greater in past time than it is now. We can see, however, that the present face of the cliffs has hardly changed for the last 4,000 years; at some points there have been falls of rock, evidenced by the talus-slopes below, but these are not large, and in most places the same vertical cliff still stands which presented itself to the eyes of the ancient Egyptians: the scars left by the excision of their immense building stones are still plainly visible, and their very tool-marks are still fresh upon the surface of the rock.

The total amount of waste would not certainly average a foot along the whole line, and we may thus form some idea of the

enormous span of years which the width of the rocky scar presents to our imagination, even allowing for the possibility of more rapid erosion in past times.

PART II.—THE SURFACE AND ITS PRODUCTS.

THE surface of the plain is generally formed by the angular limestone débris before mentioned mixed with more or less sand, and drifts of blown sand are everywhere present.

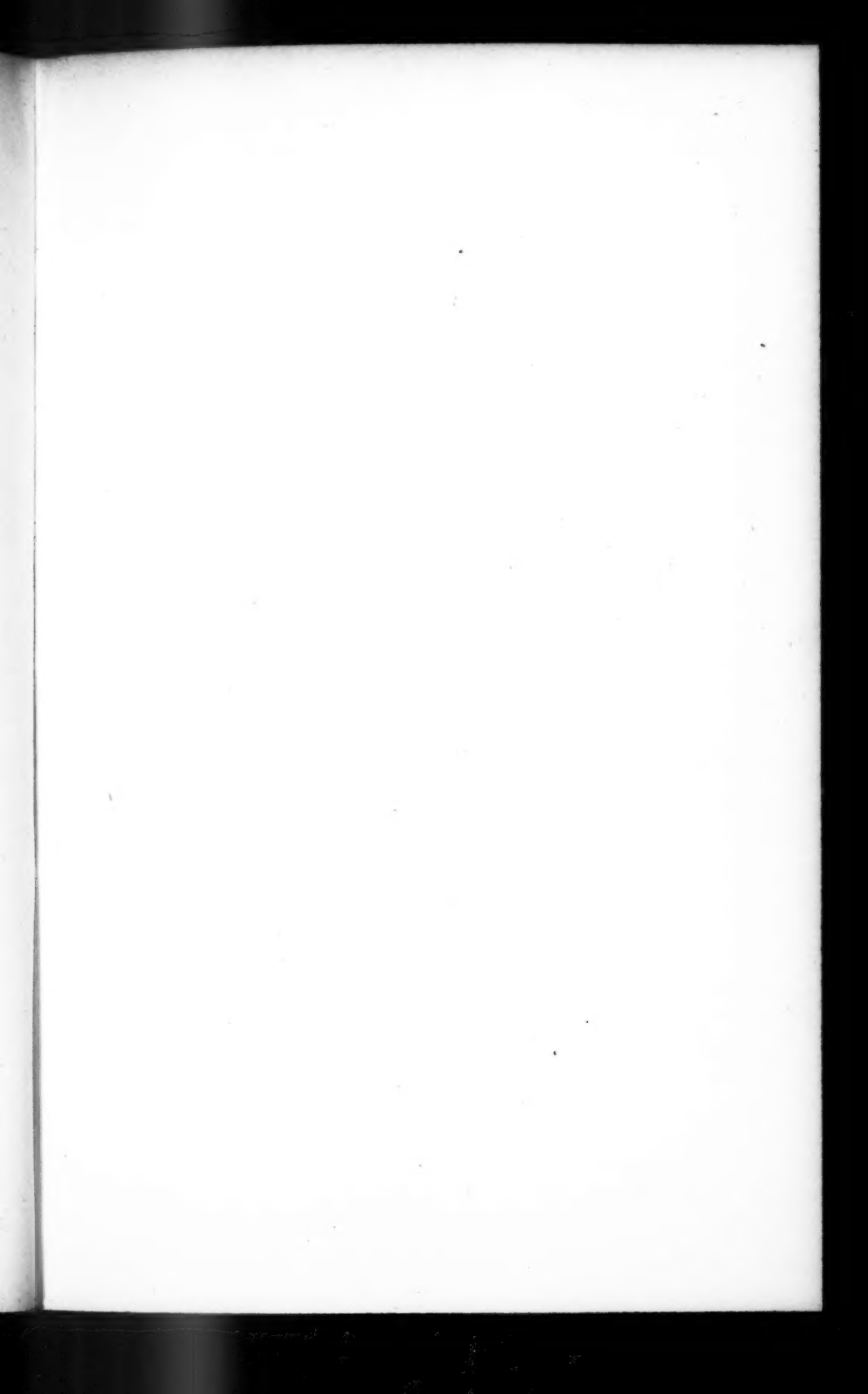
The immediate neighbourhood of the thermal springs, some dozen of which well up at different spots on the plateau, is always more or less raised in consequence of the blowing sand being arrested by the dampness and growth of herbage.

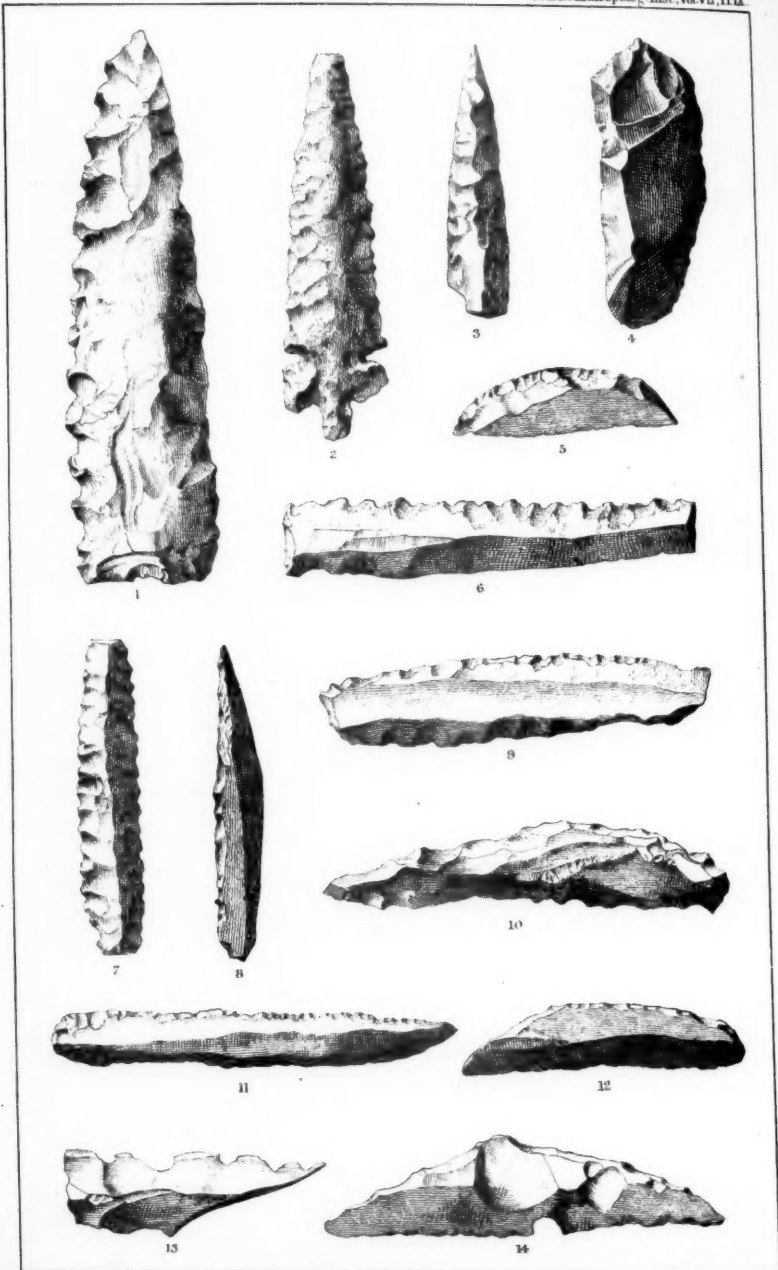
Excavations at the principal spring disclosed an ancient enclosure at a depth of 13 feet, which is believed to be the work of Abd-el-Aziz, and to have been made nearly 1,200 years ago; at these spots therefore the surface has been continually renewed by successive additions of sand.

At other places, however, the loose sand has been blown away by the wind, and a hard uneven surface exposed below, which is formed of sand compacted by the deposition of salts from the saline waters which here permeate the soil; such surfaces are not infrequent on the slopes in the vicinity of the springs and on the higher parts of the plateau, but always in places where, except for sand-drifts, the surface has probably remained unchanged for many hundreds or even thousands of years. It is chiefly at such spots that the flakes and flint implements have been found. Their occurrence was first noticed in 1872 by Dr. W. Reil, the director of the sanatorial establishment at Helwan; he informs me that he sent a short account of them to Professor Lepsius, who briefly mentioned the discovery at a meeting of the Ethnological Society of Berlin, but the notice itself was not published, neither have the flints been made known by any subsequent description. In the pamphlet previously quoted Dr. Reil just mentions "the numerous fragments of flint, worked by human hands, which are found lying on the sand near the springs;" some of these localities I had the advantage of visiting with Dr. Reil, and others I found during my stay at Helwan. Of the flakes and implements which I then obtained I now propose to give some description.

There are at least five localities near Helwan where such flints may be picked up in considerable abundance, and which have all the appearance of being the actual places where the weapons and instruments were manufactured.

All these are spots where the winds have blown away the





J.P. & W.R. Enslie, London.

FLINT IMPLEMENTS FROM EGYPT.

loose sand and exposed the old hard surface above mentioned, in the hollows of which the flint chips occur, as well as on the sand slopes below, whither they have been washed down by the rains.

The assemblage of implements found at one place is not the same as that found at another, each group containing some types that are absent from the others; I will therefore take the several localities in order and describe the forms occurring in each assemblage.

First Locality. This lies to the north, at a distance of about a mile from the hotel, on the southern bank of the Waddy Karafich, and only about 100 yards from the railway; here on the sandy slope of the valley-side there appears to have been a saw manufactory, small neatly-made flint saws lying about in considerable abundance, so that I quickly picked up fifteen or sixteen specimens when I first visited the place, which was I believe previously unknown to Dr. Reil. (*See Map, Pl. VII.*)

They appear to have been fashioned in the following way:—A good flake of even width having been chosen, the bulb of percussion and the narrower end were both struck off, so that the remainder might be of nearly equal thickness throughout, and the two ends were neatly squared and chamfered off. One of the sharp sides was then so nicked out as to leave a series of projecting teeth. In some cases the notches are very small and far apart, but more commonly they are set close together, the interspaces forming sharp teeth as in our steel saws (*see Pl. IX, fig. 6*), and sometimes they exhibit a graduated series from large to small teeth.

These saws vary in length from two to four inches, and signs of wear are plainly visible on some of the specimens; instances also are frequent in which both sides have been chipped into a saw edge, the teeth on one side being broken and polished if by long wear; hence we may infer that the instrument has been reversed and chipped up on the other side in order to fit it for use again.

These saws may have been mounted in wooden holders like those from Switzerland, but some of them which are neatly bevelled off along the back as well as at the two ends appear to be fitted for use without the interposition of a handle.*

One instrument of a very peculiar form was found at this locality (*fig. 14, Pl. IX*); in shape it is elongately triangular and is worked (or worn) along the back from the centre to the two points; the straight edge, though slightly broken by acci-

* Mr. Franks has since shown me some very similar saws from the neighbourhood of Bethesdaour, and the Christy Collection possesses one from Sakkara, on the other side of Memphis, of the same type as the Helwan saws.

dental chippings, appears to have been originally entire; it may have been a kind of double scraper like that figured on p. 456 of Dr. Evans' "Stone Implements," but it also resembles in some respects the smaller implements (figs. 5 and 12) described on a subsequent page. Its extreme length is about 2 inches.

This same locality also yielded two broken but remarkable weapons, which are probably portions of arrow-heads; they belong, however, to different types, one having a triangular section, and worked on two faces by broad even flakings that produce slightly serrated edges; the tip is broken, but its original length would have been about 2 inches. (Pl. IX, fig. 7.)

The other is clearly the upper portion of a long arrow-head, and the flint is of a bright brown colour; it is somewhat flatter on one face than on the other, but both are beautifully worked, and the whole is brought to a fine sharp point. (Pl. IX, fig. 3.)

Besides these, two perfect lance-heads were found, each about 3 inches long and carefully worked all over; the best of these was picked up by Mr. George Walpole, and has been deposited by him in the Museum of the Royal Irish Academy; it is manufactured out of a curiously banded flint, and both edges are strongly and evenly serrated; that in my possession is not quite so elegantly shaped, and one side only is chipped to a serrated edge, the workman having been apparently unable to develop a similar serration on the other side, which only exhibits a wavy outline. (See Plate IX, fig. 1.)

All the above-mentioned weapons and implements were found within an area of 40 or 50 square yards, just below a sand-bank, on which the fabricators had probably taken up their station. On the pebbly plain beyond I also found a number of flakes and chips.

Second Locality. This is barely a quarter of a mile S.W. of the above, but is at a slightly higher level, in the neighbourhood of a well, called the *Beer-el-omar*. The sand here is saturated with salts, and is set into a hard hillocky surface, in the hollows of which there are many flakes and small implements.

I obtained several of the little pointed instruments which occur most abundantly at the locality to be next mentioned, and the description of which I will therefore leave for the present, only remarking that they present such small differences in length, form, and style of workmanship as suggest the hand of a distinct though equally skilled workman.

One instrument found here seems intended for use as a saw, but is of a somewhat different pattern to those first mentioned, the outline of the saw edge being slightly convex, and the other side being thick and roughly chipped; possibly, however, this side may have been originally nicked out into a coarser series of teeth, which have been broken down by use. (Pl. IX, fig. 9.)

At one spot in this vicinity I came upon a number of fragments of bone, which proved to be horses' teeth, split up into pieces of various sizes; among them were numerous spalls, flakes, and roughly worked scrapers, together with one worn or worked flake about two inches long. This association may only have been accidental, and the teeth may of course have been split by the heat of the sun, but there are three circumstances which give some colour to the idea that the teeth are of the same ancient date as the flints.

(1.) There were no other bones to be seen near the place, so that we must conclude that the teeth were brought without the rest of the skeleton.

(2.) I subsequently found small slips of the outer casing of such teeth among the flints at the first-mentioned locality.

(3.) The teeth have certainly been exposed for a long period of time, and the animal matter has been completely removed.

It is possible, therefore, that these horses' teeth were utilized in some way, either in the production of bone implements or in the manufacture of the flints; now I did not observe any implements made of the former substance, and the teeth in the original condition would hardly be chosen for this purpose, they being so hard that the flint knives and saws would have made little impression upon them.

On the other hand, it seems not improbable that the hard teeth may have been used in the production of the fine secondary working on some of the flint implements, for on trying the experiment with a piece of hard bone, I succeeded in producing a very similar bevelling, by pressing and working it against the edge of a flake. A similar result, as Dr. J. Evans has pointed out, is produced by scraping a flake along some hard substance, so that in many cases it is very difficult to decide whether this blunted edge is the result of use and wear, or of intentional working in the first instance.

The Third Locality is nearly a mile further to the south-west, and occupies the southern flank of a rounded mound-like spur in which the higher sandy plateau here terminates, and from which the ground slopes gradually down to the cultivated alluvial plain.

Here also there is a thermal spring, which has lately been enclosed and converted into a well; round this the flints were in especial profusion, and a score or so could be picked up in a few minutes, by far the commonest being the very small knives or scrapers figured in Pl. IX, figs. 5 and 12.

Two of these present a completely semicircular back, worked on both sides of the central ridge, and brought to a point at both ends, see Pl. IX, fig. 5.

All the rest are worked only on one side of the back, and the greater number are particularly knife-like in shape; they are made from small flakes, averaging $1\frac{1}{4}$ inch in length, one edge of which is left sharp and untouched, while the other is worked up into a rounded back by the fine chipping previously mentioned; one face is always flat, and the other more or less elevated according to the number of faces presented by the original flake, so that the section is generally flat, or flatly triangular; some of the larger specimens are $1\frac{1}{2}$ inch long, and exactly resemble the outline of the kind of knife known as a "Wharnccliffe blade," but in others the curve is sharper and shorter; I may observe, also, that when the flakes are placed upon their lower or flat faces, the point lies sometimes on the right, and sometimes on the left side.

I am informed by Mr. Franks that these little instruments are extremely like the small flakes found in certain of the French and Belgian caves; these are described as "sharp knife-like flakes, trimmed to a narrow point at one end, from a shoulder about midway of the blade." Dr. Evans also figures some similar types from Kent's Cavern, and calls particular attention to them as not having been elsewhere noticed ("Stone Implements," p. 456-7).

Dr. Evans believes that the thick edge of these flakes has not been intentionally trimmed, but has been blunted by wear, that they were mounted in wooden handles, which protected the sharp edge, and that they were used as scrapers, and not as cutting instruments.

I find, however, that this view is not quite accepted by all archæologists, and though it is with very great diffidence that I venture to differ from such an authority as Dr. Evans, I am encouraged to think that such flakes (at any rate the Egyptian types) may have been used for other purposes than scraping.

In the first place, I may refer to the doubly-pointed instrument (fig. 8) with a uniformly curved back, which is worked off on both sides, so that its edge is slightly wavy, as presenting a similar form of instrument, in which there can be little doubt of the back being produced by intentional trimming; in another of these semicircular instruments the chipping is almost entirely on one side, but in both of them the chipped facets make a more acute angle with the edge than is the case with most of the forms now under consideration.

Secondly, I may refer to the trimming on the backs and ends of the saws previously described as being of a similar character.

Thirdly, it appears to me that when a large number of the knife-like flakes are compared, their general form points rather to the use of the cutting edge than of the trimmed or blunted

back. Their most constant characteristics are the sharp edge and the pointed end, so that they seem peculiarly fitted for incising and cutting; the amount of the working along the back varies with the thickness of the flake, but the width of the instrument is apparently kept in proportion to its length; again, the curvature of the back does not seem a character that is likely to be produced by ordinary use as a scraper, and in some specimens the working is carried so far towards either end as to preclude the possibility of its being mounted lengthwise in the side of a stick when this edging was produced, and the same remark will of course apply to the more completely semicircular types. It is true that the blunted edge of the commoner forms makes a less acute angle with the plane of the flatter face, and thus presents some appearance of having been produced by the action of scraping, but if we assume that the cutting edge was intended to be used, they may have adopted this method as the easiest way of producing a blunted back.

I also obtained at this spot three flakes of a much thicker and stronger type, having an extreme thickness of about one-sixth of an inch along the back, which is slightly curved and rounded off at each end, thus presenting the appearance of having been intentionally worked. In two of them the straight inner edge is somewhat worn and broken, as if it might have been used for sawing; in the third this edge is minutely chipped as if it had been reset, or possibly had been used for scraping, but this like the other instruments seems fashioned with too much care to have been used for any ordinary rough work.

Another form of pointed tool likewise occurs which somewhat resembles fig. 228, in Evans' "Stone Implements," and may, like that, have been intended for a rimer or borer; these are made from stout triangular or quadrangular flakes, one edge of which is worked off, particularly towards one end, so that this is brought to a long narrow point, which has at the same time great strength and power of resistance on account of its triangular section.

The few specimens I found do not, however, show any traces of wear on alternate edges, as is the case with most boring tools, and they may only have been used as scrapers.

The truth is we can only speculate on the general uses to which these various small instruments may have been put, and I think we are at present entirely ignorant of the precise purposes for which they were really employed;—the existence of several different types among them, some thick and strong, others thin and delicately worked; some pointed and some rounded off at each end; the care bestowed upon such small pieces of flint and the accuracy with which each form is repro-

duced—all these facts lead one to believe that they were not all used for the same purposes. Again, from their occurrence in such numbers at one particular spot we may, I think, draw one of two inferences; either this is the place where the little instruments have themselves been fashioned, or else it is the site of a manufactory where they were used as tools in the preparation of some other materials. The occasional presence among them of the small cores from which they have been struck seems to render the surmise of their having been made upon the spot a fact beyond all reasonable doubt, and though it is of course possible that they may have been put into immediate requisition; still I have not been able to detect upon them any such signs of wear and polish as are visible upon the saws at the first locality, unless the minute chipping is of itself an evidence of their use for some particular purpose.

It is also worthy of remark that almost every flake has been ingeniously utilized in some way or other, so that it is the exception to find any piece of flint here which is entirely unworked; those which flaked off inconveniently and were not fitted for conversion into any definitely formed implement are always worked up at the bulb end, even outside spalls and slives of flint being treated in this way; sometimes the end is worked off triangularly, the point of the percussion bulb forming its apex on the under surface, as shown in Pl. IX, fig. 4. More usually, however, it is rounded off, and brought to a neat edge by a few short flakings. These chips and spalls are often of such irregular shapes that no other part of their circumference could apparently be utilized, so that it is difficult to understand the object of thus trimming up the bulb end.

The Fourth Locality is only a short distance south of the Helwan hotel, near the springs which issue at the head of the marshy or rushy ground in the vicinity. Here the wind has blown away the looser particles, and exposed the lower rugged surface of compacted saliferous sand.

Amongst the hollows are plenty of chips and portions of small trimmed flints like those just described, but specimens worked along the sides are not common; a very remarkable arrow-head, however, was picked up here during my stay at Helwan.* This weapon is figured at Pl. IX, fig. 2, and is seen to be of an elongately lanceolate form, about $2\frac{1}{2}$ inches long by $\frac{1}{2}$ inch at the base, from which it tapers towards the point; the extreme tip has been broken off, but it may be compared with the fragment from the first locality (fig. 3), which has a particularly sharp point; its thickness is not more than one-tenth of an inch, its

* This was found by Miss Whately's little protégé, Najeeb Mansoor Shakoar, who has entrusted it to me for presentation to the Christy Collection.

lower face is nearly flat, and its upper surface is finely worked all over, but the conformation of the broad end is its most remarkable feature, this is both notched and tanged; an indentation has been made on each side, and the base has been chipped out into a tang, so that two lateral wings are left, and there are practically four notches, by means of which the head could be very securely bound on to the shaft.

The Fifth, and last, Locality which I visited lies about a mile and a half further on, in the same direction, near a sulphur spring overlooking the Waddy-el-Reshayid. Before reaching the spring, I came upon a spot where numerous flakes and cores were scattered about, the former being chiefly remarkable for their greater size. Very few bore any traces of secondary working, except at the bulb end, and at first sight they appeared to be the result of a ruder state of manufacture, or the work of unpractised hands; it is more probable, however, that this might have been simply a flaking station, whence the better flakes were passed on to be used elsewhere, or to be finished by a different set of workers. It is at any rate a fact that a little further on beautiful flakes occur in some abundance, which bear evident signs of wear or working; these are strewn over the surface of a sandy plain bordering the shallow valley, and lying between the spring and three palm-trees which form a conspicuous landmark.

I think it is probable that the flints occurring on this plain have been washed down by the rains from the neighbourhood of the springs, where their makers would most likely have stationed themselves; it is true that none are now to be seen near the springs, but they would necessarily have been covered up by the mounds of sand which have since accumulated. Dr. Reil informed me that flakes were found in clearing out some of the other springs, where similar accumulations have taken place.

The most noticeable specimens of flint work found at this locality are certain long, thin, and narrow flakes, which have greatly the appearance of being intended for knives. Their shape, however, is quite different from that of the little knife-like flakes previously described, and there is an entire absence of the characters which induce me to doubt whether those instruments were used as mere scrapers. In the flakes now under consideration, the blunted portion has much more the appearance of being the result of wear, and might very well have been produced if the flake had been mounted as Mr. Evans suggests; for the chipped side is approximately straight, and is not worked to a point; on the contrary, when this side happens to slope towards the thin end, the chipping ceases exactly where it would if caused by scraping a nearly level surface. (Pl. IX, fig. 11.)

Again, many unused flakes were found together with those presenting signs of wear; and on the slopes below the spring, many thicker flakes, nearly 3 inches long, were found, most of which were unworked, except at the bulb end, but a few of them were worn down along one side, while the sharper edge was ragged and irregular. Here also many of the broader and thicker flakes were roughly worked all round, and one of these appears to have been a drill or borer; it is a flake of some thickness, and about 2 inches long, brought to a rude point at one end, which bears signs of wear upon alternate edges. (Pl. IX, fig. 10.)

Some of the other flakes are lanceolate or leaf-shaped, but are only chipped up at the bulb end; thus again we find that almost all the fragments bear evidence of having been prepared for some use or other.

CONCLUDING REMARKS.

Two things will immediately strike any one who is looking over a collection of Helwan flints: firstly, the small size of the implements; secondly, the absence of any adze or celt-like forms.

Still, we can hardly suppose that people capable of making such saws, knives, and arrow-heads could have been entirely without such weapons as hammers or chisels, and their absence is probably only indicative of the truth of the theory already advanced, that Helwan was a manufactory of small implements only. It is moreover a fact that flint tools of much larger size have been found in other parts of Egypt, and though these are unaccompanied by any such small forms as have been described, it is quite possible they may be of much the same age.

There are, indeed, in England, similar manufactories of small weapons, where only cores, flakes, arrow-heads, and scrapers occur; three remarkable instances of such stations have lately come under my notice, one being near Brandon in Suffolk (discovered by Mr. S. B. J. Skertchly), a second in Oxfordshire (by Capt. Dillon), another near West Keal, in Lincolnshire.

In approaching the difficult problem of estimating the probable age of these Helwan implements, I may remark, *in limine*, that their occurrence on the surface does not militate against their being assigned to a remote date, as it would in this country, because the particular surface on which they are found has probably remained nearly unchanged for several thousand years.

Where accumulation is known to have gone on, as in the immediate vicinity of the sulphur springs, they are found buried at a greater or less depth, while in the shallow valleys and watercourses, where there has been recent inundation, they do not occur at all.

As Mariette Bey remarks, in his "Notice des principaux Monuments dans le Musée à Boulak," "The question of the Stone Age in Egypt has not yet been solved; the flints bear evident traces of the work of man, but one cannot conclude, as has often been done, that they belong to the very remote period which has been designated by the rather vague name of the *Prehistoric*. Almost all the flints have been collected on the surface of the soil, and there is therefore no evidence to prove the date of their manufacture. They may, indeed, even at the most flourishing epoch of Egyptian civilization, have used flints as tips for their arrows, or as knives for the incision of mummies, and it is not even impossible that some of them are as late as the Arabian era."

He proceeds to state that some flint implements have been found in the tombs, "particularly in those of the Greek period." Some of these being placed in the Boulak Museum I was able to see them, and found them to be of very different types from the Helwan flints; among them are two thin polished celt-like weapons, each about 4 inches long, having a chisel edge and coming to a point at the other end. A beautifully worked arrow-head of the broad shield-shaped type. Likewise four or five ordinary flakes that might have been struck at any time; and three pierced stones, irregular in shape, but smooth and almost polished. With them were also several yellow cowries, one or two small *Nerita*, and what appeared to be imitations of the cowries in bronze. Altogether the assemblage has rather the appearance of being a set of curiosities placed among other valuables in the tombs, or perhaps deposited there in deference to ancient customs. and cannot be taken as evidence that such weapons were in use at that time.

No knives, saws, or scrapers were among them, and they cannot therefore be compared with the Helwan flints; but the different shape of the arrow-head may be remarked, and the smooth celts may perhaps be taken to indicate a more recent age than the chipped tools of Helwan.

The museum, however, also contains a collection of rude weapons from the Bab-el-Moulouk (Thebes), which have a much more ancient appearance. In size, form, and workmanship these Theban flints are comparable to our palæolithic type; they have been described and figured in a paper communicated to the Institute by Sir John Lubbock,* in which he combats the views expressed by Professor Lepsius regarding their origin and age. Dr. Lepsius was then sceptical as to the signs of human workmanship presented by these flints, and one of his difficulties was

* Journ. Anthropol. Inst., vol. iv, p. 215.

the fact that no better-worked specimens had been found in similar situations in Egypt; now Helwan bears much the same relations to the Nile valley as the borders of the Bab-el-Moulouk and the other localities where such flints have been detached. Sir J. Lubbock says, "I found them on the slopes of the hills and on the lower plateaus above the level of the inundation wherever flint was abundant and of good quality."

The occurrence, therefore, of such finely-worked flint implements on the Helwan plateau ought to remove from Professor Lepsius' mind all doubts regarding the human origin of the larger and ruder forms.*

From a mere comparison of the three series in the Boulak Museum, one might be inclined to look upon the Helwan flints as of intermediate age between the primitive Theban implements and those of the Ptolemaic tombs, but a comparison of the workmanship of different kinds of tools is no very sure guide, and it is quite possible that the Theban and Helwan implements may be very nearly of the same date.

The occurrence of flint tools and weapons within the valley of the Nile, and in such near proximity to the three most ancient and important cities of Egypt (This, Memphis and Thebes), points clearly to one of two conclusions: either they were used for certain purposes by the ancient Egyptians themselves, or they were fashioned by still earlier inhabitants of the Nile valley. Sir J. Lubbock inclines to the latter opinion, but I cannot help thinking that there are many circumstances which tend to support the other view. We know that the Egyptians did use flint for many purposes; arrows have been found in the tombs, with flint tips of a peculiar form.† Broad-bladed knives with thick backs also exist in several collections of Egyptian antiquities, and these have been supposed to be the "Ethiopian stones" which Herodotus speaks of as being used to make the first incision in embalming mummies; some of these have been figured by Lepsius,‡ and two of them are reproduced in Wilkinson's "Ancient Egyptians,"§ the smaller of these, which was found at Memphis, bears great resemblance to the small knife-like implements occurring at Helwan, and lends colour to the view that these were intended for the purposes of incising or cutting

Lepsius found a number of flakes in a tomb, to which he has

* I am informed by Mr. George Walpole, who has lately revisited Egypt, that extensive discoveries of flint implements have recently been made by Prof. Haynes of Boston, U.S., both near Cairo and in the vicinity of Thebes. At some of the *ateliers* small flints of the Helwan type are found, while at others the tools are larger and rougher, bearing more resemblance to our Palæolithic types.

† Evans' "Stone Implements," p. 329.

‡ *Zeitschrift für Ägypt. Sprache, &c.*, 1870.

§ Wilkinson's *Popular Account of*. Vol. ii, p. 164.

reason to assign a date of about 2500 B.C. We know also that the Egyptians practised the rite of circumcision, for which knives of flint were employed at a very early date.*

Again, if anything may be safely founded upon the facts previously noted, regarding the association of horses' teeth with the implements, it would tend to bring the limit of their age within some 3,500 years, for it is said that the horse is not represented on any Egyptian monuments erected before the 18th Dynasty, the date of which is given as either 1500 or 1700 B.C., and it is concluded that the animal was not known in the country before that time.

Moreover the workmanship of the implements themselves, the development of the arrow and spear heads, the carefulness bestowed upon the saws and knives, would seem to indicate great perfection in the art of flint manufacture, such as might have accompanied the comparatively advanced stage of civilization to which the Egyptians had attained at the period alluded to.

While, therefore, it is possible that the Helwan flints may belong to a very remote age, yet there are many considerations which incline us to assign them to a period which is hardly prehistoric, so far as Egypt is concerned.

DISCUSSION.

Mr. LEWIS reminded the Meeting that the use of stone implements in the desert adjoining the country under discussion was mentioned in Exodus iv, 25, and Joshua v, 2. These notices might be taken into account in considering the age of the specimens exhibited.

The PRESIDENT expressed his satisfaction at seeing so large a collection of the smaller varieties of flint instruments found in Egypt. Although there might be a difference observable in those found in different localities, he did not think that there were manufacturing of different kinds of instruments at the various places, but rather different kinds of manufactures of some other nature, for which different implements were used. The instruments found were not new and unused, but most of them showed more or less evident marks of wear. The saws, for instance, were polished by use, and where the teeth had been broken off there had been in some cases new teeth formed at what had been the back of the saw. The minute chipping along the edges of some of the instruments probably arose from their having been used to scrape some bard substance, such as bone. In this respect they closely resembled some of the small instruments from the caves of the Dordogne, the sharp edges of which had probably been let into wooden handles, while the outer edge was used for working bone, and was thus worn away. The triangular implement bore much analogy with one from Kent's Cavern, and with what the Italian archaeologists have termed the "rhomboidal flints." The arrow-head with the

* Exodus iv, 25, and Joshua v, 2.

notches at the base was of a form he had not before seen from Egypt, and the same might be said of the lance-head. The peculiar chisel-ended form of arrow-head which had been found in Egyptian tombs appeared to be absent in the series exhibited. The absence of the larger forms of instruments might be accidental. When flint is scarce, the largest pieces are those which in course of time get appropriated for fire-producing purposes, while the smaller forms are left. He inquired whether any fragments of bone had been found with the flints, as it seemed probable that many of them had been used for working in bone; and he suggested the possibility of the laminæ of horses' teeth, which had been described, having been wrought into beads or ornaments. He also inquired as to the source of the flint, and its geological age. As to the instruments themselves, they appeared to be neolithic and not palæolithic, though it was difficult to assign any definite date to them. Although many roughly-chipped implements had been found in Egypt, he had as yet seen nothing, which, either from the circumstances of its finding, or its own character, could be confidently pronounced to be of the palæolithic age.

In replying, the AUTHOR pointed out the position of the localities on the diagram he had prepared. In answer to Mr. Moggridge, he stated that the temperature of the sulphur springs was considerable, he thought over 100° F., but could not recollect exactly. He thanked the President for his suggestions, and remarked that the teeth were curiously placed in connection with the implements; they were broken up into long pieces, and one of the knives was lying among them, that it looked as if the knife had been used in splitting them up.

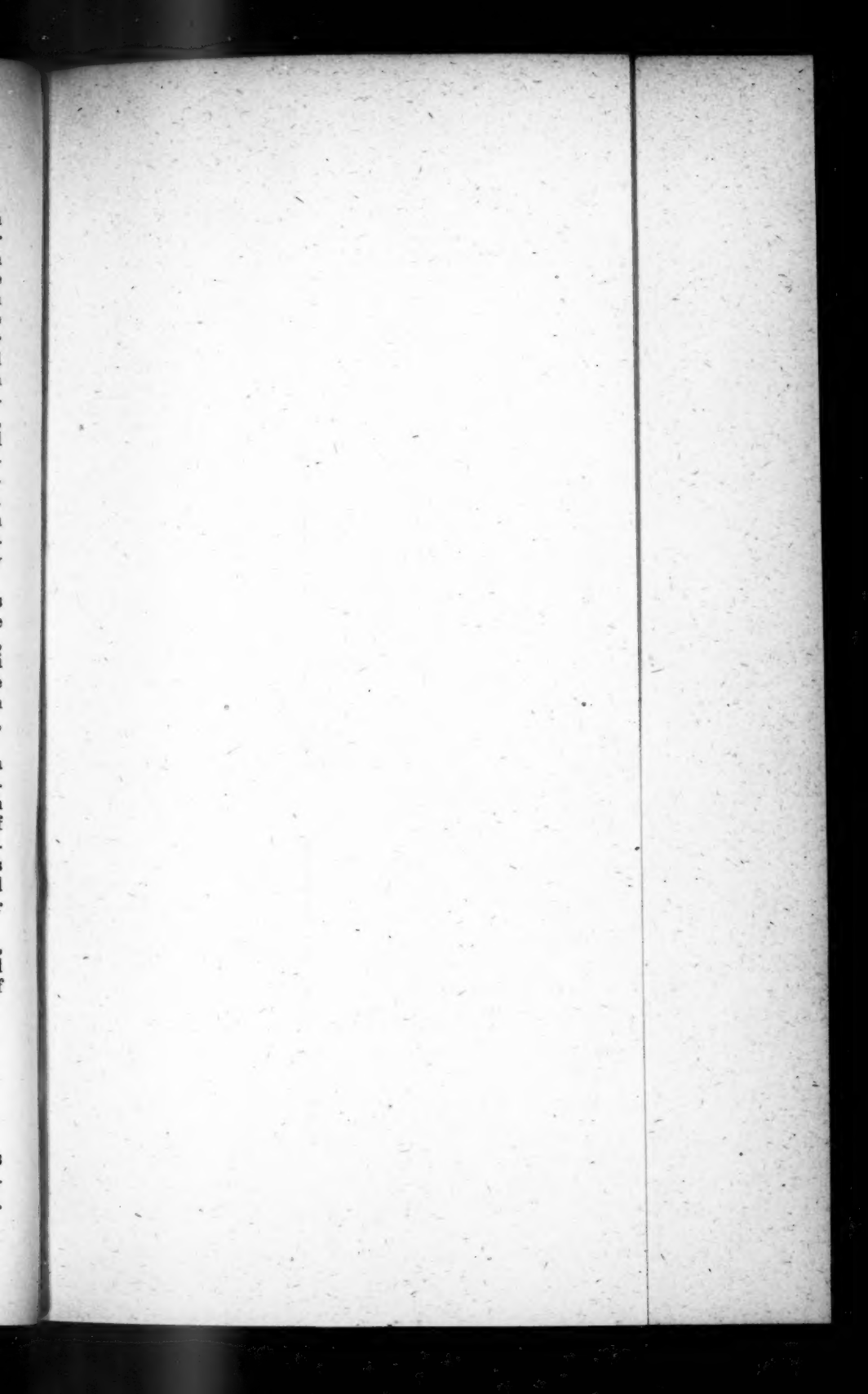
With regard to some of the smaller instruments, it had been suggested to him that they might have been used for straightening the shafts of arrows. He drew attention to a small collection of implements he had found in Lincolnshire, on the borders of the Fens—the place appeared to have been a station or manufactory similar to those at Helwan, and the association of flints was somewhat similar; there were many small flakes and chipped instruments, but no adzes or anything larger than a scraper or "strike-a-light."

The flints used in the manufacture of the Egyptian implements, were pebbles found on the lower plateau, which had been washed down from the hills of Eocene limestone above, the upper beds of which abound in siliceous concretions of various sizes.

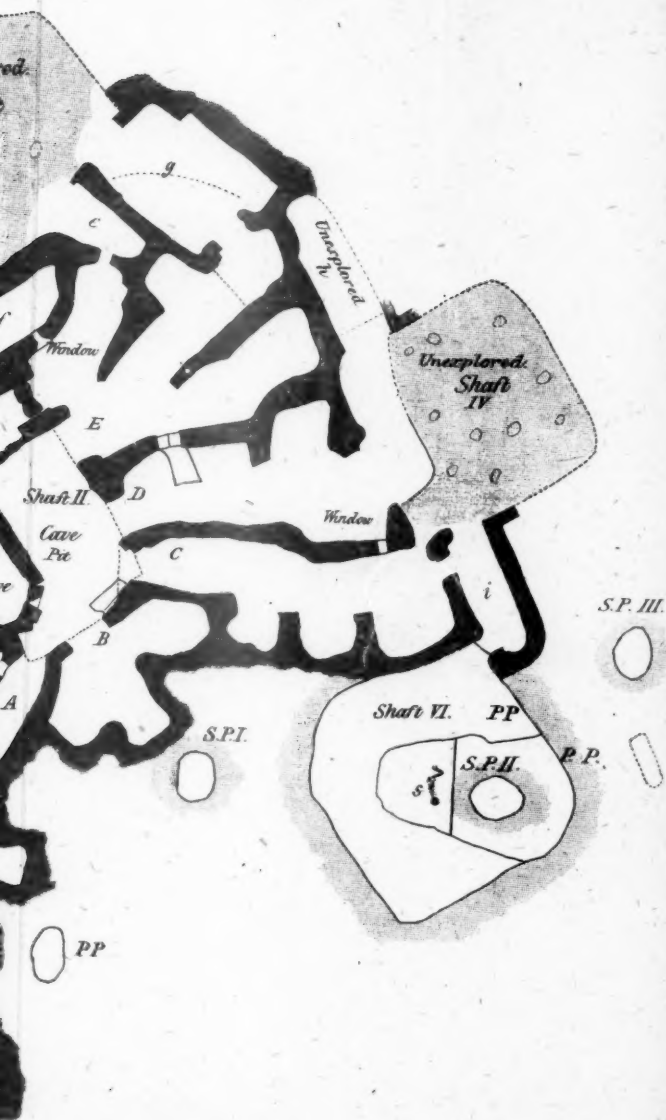
The following paper was read by the Author:—

ADDITIONAL DISCOVERIES AT CISSBURY. By J. PARK
HARRISON, M.A.

THE exploration of the galleries of the "Cave Pit," which was commenced late in the autumn of 1876, has at length been completed, and it has resulted in discoveries of considerable interest.







EXCAVATION



*A. to G. Galleries of Cave Pit, 20 feet deep
a to i. Galleries of adjoining Shafts
discovered in 1877.*

*S. P. Small oval pits, from 3 to 4' 6 deep.
I to IV.*

PP. Pebbles, Pots, sherds &c.

s. Skeleton, found in 1878.

CISSBURY.

PLAN OF
EXCAVATIONS MADE IN 1876 & 1877.

The primary object of the excavations at Cissbury, as shown by Mr. Ernest Willett in 1874, was the acquisition of a description of flint, which is not met with near the surface of a quality or in a condition of softness suited for the fabrication of weapons and tools agricultural or others.* This had been previously demonstrated by Canon Greenwell to have been the case at "Grime's Graves," in Norfolk; and in the opinion of the above named archaeologists mining operations must have been carried on for a very long series of years at both places.†

Several questions remained for solution, and it was hoped that some of them might receive elucidation from further research. Amongst others, the relative dates of the excavations, and the period during which some at least of the galleries may have continued open, and so have been available for shelter and refuge.

Before going into details, which will be necessary, even if tedious, in order to see what features in the galleries throw light on the above points, I will recapitulate the description of the cave-dwelling, or chalk hut, which gives its designation to the "Cave Pit," and affords the only instance of occupation that has as yet been met with on the floor of any of the shafts.

When perfect, this cave would have had much the appearance of a large baking-oven, such as one often sees in farm-houses. It was excavated beneath a buttress of solid rock, which projected about seven feet into the shaft on its west side. The chalk roof had partly fallen in, but part remained attached to the side of the shaft when first discovered. It gave way whilst the workmen were clearing out the interior, and Guiles the foreman narrowly escaped injury from the fall of the chalk, which moreover broke down part of the south wall some three feet long.‡ Over the roof, as it originally existed, there was a layer of fine white concrete, which sloped down at an angle of about 45°, and protected the hut from wet and observation, besides affording means of access to the bottom of the shaft. An entrance which once existed on the eastside was filled up with chalk blocks, neatly fitted together, so as to form a dry wall. And against this, on the exterior, there was a fireplace, the first that had been noticed at the bottom of a shaft, though charcoal had been met with half-way down in the filling in of several pits, indicating by this and other signs that they had been used for shelter. *A smaller entrance had been pierced in the south corner of the hut.*

* Mr. Willett thinks it probable that they were used for shelter afterwards.

† General A. Lane Fox was the first who discovered that Cissbury was a great flint factory. This was before any shafts had been cleared out.

‡ A quantity of rubble was stacked round the walls to preserve them during the winter, with partial success. They had previously been carefully examined by Prof. R. Jones and other geologists.

The fire at the bottom of the Cave Pit had been made on a floor of fine chalk silting about 4 inches thick, washed down apparently from the layer over the roof of the cave; and the charcoal from the fire as it accumulated would appear to have been thrown upwards,—a considerable quantity being incorporated with the fine concrete, to a depth of about five inches, over the greater part of its extent.*

Both in size and plan the small shafts and rude galleries which were explored by General Lane Fox, in 1875, in the ditch of the camp, differed from those which have been opened inside the ramparts. So much was this the case that it can scarcely be doubted that the former are by far the oldest, and the homogeneous character of the "filling in," in the group of shafts communicating with the first "Skeleton Pit," showed conclusively that the large angular blocks which they contained were introduced at one time and had not been exposed to atmospheric influence.

In the case of the Cave Pit, however, there was every appearance of the shaft having gradually filled in after it had been abandoned; † and the walls bore marks of weathering. The filling in also was such as might have occurred from periodic falls of chalk—principally from the upper portion of the north and east sides, which would have been most exposed to the effects of frost and rain. Blocks do not appear to have been thrown in previously to the formation of the red seam, which crossed the pit from east to west.

Such, in brief, is the evidence of the Cave Pit itself. We now come to the proof of continued occupation that is afforded by the exploration of the galleries which has been carried on during the year 1877.

Besides several doorways or openings in the walls which were found to be filled with chalk artificially fitted together, barriers were met with in four or five different places. Thus, in gallery A, the rubble was packed so close to the roof, for a space of about five feet, that on a superficial examination in 1876 we were under the impression that there was nothing beyond it. Mr. R. B. Martin, however, who assisted in the exploration in the early part of last summer, with some difficulty (owing to the way in which the rubble was cemented together with stalagmite) formed a passage through the barrier into a cave immediately behind it which was nearly free from chalk rubbish; and then passing through a narrow opening which led into the cross-gallery *a*, met with little obstruction to his progress along it

* This account was given in substance in the Report on the "Cave Pit" last year.

† It was so also with the filling in of Mr. Willett's pit.

and gallery *b*, at the end of which, on the north side, he found an opening into a third gallery *c*, communicating with Mr. Willett's pit. In the other direction, gallery *b* was found to lead to a shaft (V) afterwards opened. Chalk rubble had been placed by the occupants against the sides of these galleries, where it was left by us intact, to show the original condition of the passages; but it was subsequently removed in places by visitors.*

Gallery B, which was much blocked, proved to be less extensive than we imagined in 1876, before the rubble was moved. In fact it was found to be a triple cave rather than a gallery, with a centre cell barely 1 foot 6 inches in height. In the south wall of the cell, about half-way across it, and in the same stratum with the flints, I found a mass of iron pyrites weighing 1½ lb., of a singular form, like some distorted reptile. It projected beyond the face of the wall, and was perfectly loose in its bed, where it was retained solely by its gravity. Twelve flints, the majority showing clean fractures, remained in situ along the line of formation on either side.

It was over the entrance to gallery B that the three horizontal lines were found of which mention was made in the Report on the Cave Pit, last year. They were simply straight lines, parallel to each other and of different lengths. Some other marks have since been discovered on the west jamb of the entrance. And on examining more closely the deep cuts on a detached block of chalk, noticed last year inside gallery B, I find that they were made *over* and parallel with earlier marks. As the shape of this block was thought to bear some remote resemblance to a rude human figure, it has been carefully removed, and is now in charge of Mr. Ballard at Broadwater.†

In gallery C, the total length of which from east to west was by measurement 26 feet, we found three caves, all on its south side. The gallery was much blocked in the centre, having been packed with rubble almost to the roof. In the furthest cave, or recess (at the east end), however, there was a clear space next the south wall, which would have served as a place of concealment. Behind a heap of rubble, on the south side, we found a

* Since this paper was read another entrance to gallery *c* has been found on the north side of gallery *a*. It is shown on the plan.

† Part of the chalk wall on which the lines were traced having been broken off by some person, and the remainder hacked over as if an attempt had been made to imitate the diagonal lines originally scored across some marks over gallery C (see Journ. Anthrop. Instit., vol. vi, p. 7), I cut out the piece of chalk to prevent antiquaries being misled by the fabrication. As it is intended to enter fully into the question of Marks on a future occasion, I will merely mention that Prof. Rupert Jones, F.R.S., has carefully examined the lines over galleries B and C, and thinks that no doubt can be entertained as to the antiquity of both sets.

window looking into gallery D, and at the east end there was a doorway or entrance to a gallery running nearly north and south; it appeared to belong to shaft IV.* And at its east end I ascertained with some difficulty (owing to the insecure state of the roof) that an opening existed in the south wall, two feet from the end, through which blocks of chalk and rubble could be seen above the ordinary level of gallery roofs. This indicated the existence of another shaft, or a chamber with a loftier roof than that of the gallery from which it was approached. It was impossible to remove a sufficient quantity of the débris to ascertain which of the two suppositions was correct, the workmen objecting to enter this gallery for the purpose of handing out the chalk. A horn pick, found at its southern extremity, was the second implement of the kind that we recovered during the exploration.

Gallery D was found to be divided into two chambers, the outer one running nearly east and west, and the inner one north and south. The ground plan, it will be noticed, fits with remarkable exactness into that of the adjoining galleries; and at the east end there is a wide opening into shaft IV.

In the north wall of the outer chamber an interesting feature presented itself, which we had not before met with. On clearing away the chalk rubble from the sides of the gallery, a heavy block, 2 feet 10 inches long by 1 foot 3 inches wide, was found wedged against two square blocks of chalk tightly fitted into an opening communicating with gallery E. They had evidently been placed in the position where they were found, to prevent access from that quarter, and they would appear to have been introduced some considerable time after the galleries were excavated, the jambs of the opening being thickly coated with stalagmitic incrustation, whilst the blocks themselves remained much in their normal state. Large blocks of chalk, of which there were many in all the galleries, would also no doubt have been placed when requisite at the entrances from the shafts; and in case of emergency the occupants of the galleries could have retreated behind other barriers of a similar kind, or have made their escape by one of the outlets in the walls.† Though nothing was found in the galleries to indicate that they

* There was also a small opening from the N. E. corner of gallery C into shaft IV.

† Tacitus mentions that underground places were used for shelter in Germany. His words are as follows:—"Solent et subterraneos specus aperire, eosque multo insuper limo onerant, suffugium hiemi, et receptaculum frugibus: quia rigorum frigorum ejusmodi locis moliant, et siquando hostis advenit, aperta populatur, *abditæ autem et defossæ* aut ignorantur aut eo ipso fallunt, quod quærenda sunt."—Tac. Germ. Cap. XVI. Mr. Godwin Austen believes that the galleries at Cissbury were used for similar purposes.—Journ. Anthropol. Instit. vol. v, p. 388.

were used as permanent habitations, the jambs of several of the entrances were rubbed and rounded. This was especially so in the case of the entrances to galleries A and C, and the doorway at the end of gallery A.*

A fine hammer of deer's-horn with a portion of the skull attached to it (showing that it had not been shed like the great majority of the horns recovered at Cissbury and Brandon), was found over the entrance in the filling in of shaft IV. It is now in the museum of Major Wisden.

A tunnel having been made along the west wall of this shaft in order to ascertain if there was any gallery from it running north, we were fortunate enough to discover one; but the roof near its entrance having fallen in, and the space for work being very cramped, all that could be done was to ascertain its existence and bearings.

Gallery E, which consists of three branches, the principal one running in a north-easterly direction, was partly cleared out in 1876. The roof of the main gallery, to about eight feet from the end (as mentioned in the Report last year) showed signs of having been subsequently heightened. It had been at first imagined that 1 foot 4 inches, the height of the lower portion of the gallery, was scarcely sufficient to allow of the extraction of flints; but upon clearing out the chalk débris, this was not found to have been so. Flints had evidently been obtained from this part of the gallery; and the height, it was subsequently ascertained, exceeded that of the centre cave in gallery B, and the antechamber at F. There would seem to have been no reasonable cause for subsequently increasing the height, excepting it were for the purpose of rendering the gallery more commodious for temporary occupation; and the abrupt change to a lower level of roof would have made it difficult to follow a refugee, and also have hindered a pursuer from using his flint weapons.

On clearing away the débris at the end of the main gallery a spacious chamber was reached. It measured 13 feet by 10 feet, exclusive of a bay at the east end, and a wide passage leading to a shaft (No. III) at its other, or western, extremity. The roof remained almost perfect, notwithstanding its span, only a small piece (about three feet square) having scaled off near the centre. Chalk rubble had been stacked against the entrance from gallery E, and the block extended nearly half across the chamber. The remaining space was quite free from chalk and available for

* Prof. Rupert Jones, who spent two days at Cissbury last summer, has reminded me, since this paper was read, that I showed him a slab of soft chalk from the floor near the entrance to gallery a, which had the impression of short hair on it, such as might have been due to its having been in contact with deer's skin.

shelter. No remains of any description were found, though the whole of the chalk was shifted to see if there was anything beneath it. Singularly enough, as many as three bladebones of small ox, or deer, were discovered in the main gallery E, and its left branch;* whilst nothing but two small bones of sheep or goat was noticed in any of the other galleries.

On the north side of the left branch there was a window communicating with gallery F, and at the end a small doorway opened into another gallery, E, belonging to shaft III. On its north wall, near the entrance from the shaft, were two groups of dots, six in each group, and several straight lines made with a tine of deer horn, or some other obtusely pointed instrument. The entrance to this gallery was effected immediately on its discovery, and the chalk blocks which closed the entrance were removed by myself.

The entrance to the antechamber F from gallery E appeared to have been purposely barred with blocks of chalk which had become cemented together by stalagmite. It was only 1 ft. 3 ins. high, and the roof of the antechamber was equally low. As mentioned in the report on the Cave Pit, the entrance from the shaft at F also had been stopped by large blocks closely fitted together. Possibly the miners may have broken through from the adjoining pit to F, and so access from that quarter had to be cut off.

In the long gallery, F F, which runs north from the antechamber, and probably belonged to the Cave Pit,† a small window was discovered behind a quantity of chalk rubble, on the east side. This, it was subsequently found, looked into shaft III; and a gallery much blocked, and rendered almost impassable with sharp stalagmitic incrustation, ran in an easterly direction along one side of the shaft. It was stopped by the cross gallery c, which contained the marks above alluded to. On its south side there was the window which, as has already been said, had been discovered in the west wall of the branch gallery E.

The only feature in the plan of the Cave Pit that remains to be described is the small chamber or cave G, in the north-west corner of the shaft. It occupies the space between the chalk hut and the entrance of the antechamber F, and runs back some six feet into the rock at that corner of the shaft. Owing to the rotten condition of the roof, this cave has not been thoroughly explored. Like the cave hut, it was perhaps broken into from the adjoining shaft I, which there is reason to believe was excavated some considerable time after the Cave Pit.

* And a metacarpal of ox. Two flint implements were recovered from this gallery in 1876.

† It was cleared out by Mr. E. Willett in 1874.

On reviewing the plan of the galleries, two main points force themselves on our attention. First, the economy of space exhibited in the excavations; and, secondly, the remarkable way in which the adjoining shafts and galleries interlace. If the plan of the pits in the ditch of the camp* is referred to, it will be seen how much space was there wasted, the shafts also being little more than half the size of those now under consideration; and, so far as the galleries are concerned, the criticism is also applicable to "Grime's Graves" in Norfolk.

In the case of the plan of the Cave Pit and the surrounding excavations (regard being had to the distinction between *original* entrances to galleries, and the smaller openings subsequently broken through the walls), there is little difficulty in tracing the sequence of the shafts. Thus, a careful examination will show in how many instances the galleries appear to have stopped short on approaching excavations which cross their way, and it may be therefore assumed were previously in existence. Galleries F, f, and the left branch of E, for example, would seem to have been adapted to shaft III, and its gallery e. And in a similar way, a short gallery belonging to Mr. Willett's pit is stopped by gallery A. Shaft I would therefore seem to be of later date than the Cave Pit, and the latter later than shaft III. Shaft IV appears to be older than shaft III, whilst shaft V may have been the latest excavated; and it is worth noting that the miners economised labour in following the planes of cleavage of the chalk rock in the two galleries belonging to it.

South of galleries A, B, and C, it will be seen that there is an absence of long galleries, and indeed of any galleries properly so called. In their place there is a series of caves, thus leaving a considerable extent of chalk rock to all appearance unexcavated. As, however, it was possible that galleries might run eastwards from shaft V, in some tortuous course, or again westwards from the shaft which it was suspected might adjoin gallery C, to ascertain this, though the small balance received from the Exploration Fund of 1875 had been long exhausted, and the season was getting late, it seemed of much importance that the plan should, if possible, be completed, and the blank space accounted for. I decided therefore on continuing the work, a sum which would pay about half the cost of clearing out shaft V having been promised by a relative.

We commenced work on this new shaft on the 18th of September. A slight depression in the turf indicated its position, but the site of its north wall was more precisely ascertained by calculation from the plan of the galleries of the Cave Pit. On

* Journ. Anthropol. Instit. vol. v, plate XV.

removing the turf, several rude implements were found at a depth of from 6 to 12 inches, as well as several sherds of pottery, mostly black, and of coarse texture; one fragment of red ware, however, had evidently been turned on a wheel. It was lying in close proximity to a flint celt, and six or seven throw-stones of worked flint, all of which were met with in a space of about four square feet. A fragment of red pottery $1\frac{1}{4}$ inch thick, a piece of sandstone much rubbed and rounded, and a few bones of some small ruminant, were the only other remains that were found within 18 inches of the surface.

The usual red seam, due to the silting in of the clay which covers the chalk formation at Cissbury to a depth of 7 or 8 inches, appeared to have entered the shaft at the N.W. and S.E. corners. Over it there was a quantity of grey-coloured chalk, which sloped down from the N. and S. sides, forming a shallow valley in the centre of the shaft, which had been subsequently filled with white chalk, derived perhaps from a neighbouring pit. The grey chalk had all the appearance of having been exposed to the light; and some thirty or more of the blocks bore marks of various kinds. They were observed on the grey chalk only, and like those discovered in the adjoining shaft (II) in 1876, appeared to be some of them natural, *i.e.*, the work of an unknown insect or worm, whilst others were evidently made by man.

One or two small bones were found at a depth of 4 feet, but nothing else, excepting an antler with three tines, in good preservation, until we reached the 8-feet level. Here the red seam from the south-east corner of the shaft divided into two branches, one extending nearly across the shaft and forming with the seam from the north-west a shallow basin; the other continuing its course at a sharp angle towards the bottom of the shaft.

Rudely made implements were met with at a depth of from 8 to 10 feet, and associated with them there was a scapula of deer or small ox. At this level we found two caves in the west wall of the shaft, 3 ft. by 3 ft. They appeared to have been excavated for the purpose of extracting an inferior description of flints, at a time when the pit had become half filled with rubbish from the upper part of the walls, and silt from the surface, owing to excessive rain. Quite a heap of flint chippings and flakes were noticed in the red seam about two yards from the west wall, and many broken and spoilt flints were collected at the same spot. An attempt had evidently been made to form implements from imperfect flints, at a time, perhaps, when deep excavations had been discontinued.

At 15 feet, a quantity of charcoal was observed near the centre of the shaft, and some imperfectly burnt wood; also

several pieces of chalk much smoked and calcined. The chalk rubble beneath was cemented together in a way that was not observed in the case of the filling-in round it, which readily separated from the centre mass. At the north corner of the shaft, about 20 feet from the surface, we uncovered the entrance to a gallery, which proved to be the one which communicated with gallery A (p. 414), and immediately adjoining, on the east side of the new shaft, there was a double cave which, on being cleared out, was found to run about five feet in the direction of the apparently unoccupied ground.

Continuing the excavation across the shaft, we next uncovered the entrance to a second gallery in the north wall, three feet from the corner. It was comparatively free from rubble, excepting at the sides, but a good deal of small chalk covered the rock floor, so that it was not easy to move about, notwithstanding the width of the chamber, seven feet from wall to wall. At the west end, there was a small window which looked into a gallery, running southwards, belonging to another shaft.* In the north corner of the wide chamber, near the west end, a narrow doorway opened into a gallery which appeared to communicate with Mr. Willett's pit; it ran parallel to gallery c, which was entered, as has already been mentioned, from gallery A. The roof at the end of the gallery had fallen in, and we were not able to penetrate further in that direction. Nearly in the centre of d, a quantity of charcoal had been deposited on the fine chalk débris, which covered the floor, and mixed with it there were pieces of calcined chalk, which had the same appearance as the rubble beneath the site of the fire in the shaft. As there was no smoke on the roof of the chamber, or marks of burning on the floor, it seemed probable that the charcoal had been introduced for some purpose from the fire in the adjoining shaft.

On proceeding with the excavation, it was found that a part of the chalk rock had been left as a bench, or platform, 3 feet wide and 1 foot 3 inches high along the west side of this shaft, returning towards its centre at an obtuse angle, and then retiring towards the south-east corner, where there were two rock steps. On the main platform, near the west side, a single block of chalk had been left standing on its natural bed, in a perfectly isolated position. It measured 2 feet 5 inches in length by 1 foot 6 inches in height. A narrow passage ran between it and the west side of the shaft, and some loose blocks of chalk, roughly fitted together, formed a wide wall, which extended from the piece of rock some six feet across the

* There was a second window in the wide chamber on its south side.

platform, leaving a space of about 5 square feet behind it, which was sheltered in part under a shallow excavation in the corner of the shaft. The rubble round this wall, or barrier, was small, and readily separated from it.

No galleries existed on the south, west, or east sides of this shaft, which had all the appearance of having been left incomplete; even the tools of the miners, consisting of a fine wedge, a pick, and three tines of deer's-horn, were found on the floor; the wedge and the pick in two separate holes in the chalk, embedded in fine silting, and the tines lying near together on the rock platform. The work was perhaps interrupted by the death of the owner of the pit. No marks of any description were found over the entrances of the two galleries; but the original face of the chalk had to all appearance scaled off. There were numerous accidental scratchings and indents on the main walls.

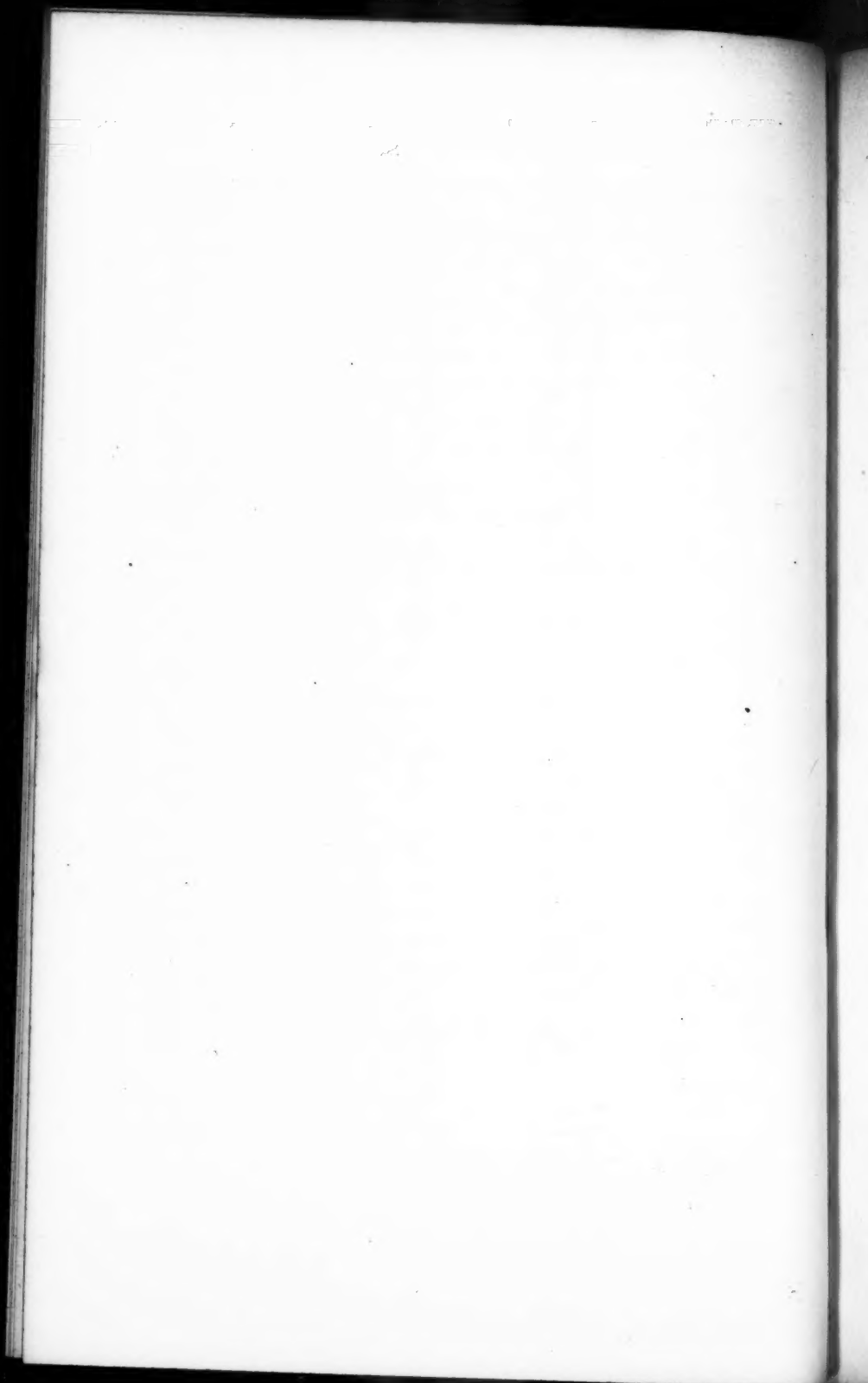
It should be mentioned that the flints found in this shaft were in all respects as good and serviceable as any that we met with in the adjoining excavations. Some of the blocks of grey chalk in the filling-in bore marks and symbols, which it is proposed to describe on another occasion. In the south-west corner, a small recess, about 3 feet deep, partly supported on rock corbelling, may perhaps have been used as a stage when the shaft was excavated.

No galleries having been found to run eastwards from the new shaft, to account for the blank in the plan of the excavations south of the Cave Pit, steps were now taken to search for a shaft adjoining galleries A and B. On examining the surface, a small patch of rank grass attracted attention, and on removing the turf blocks of chalk were discovered, which at first led to the belief that the shaft we were searching for had been found. But on enlarging the hole, it was soon perceived that if it were a shaft, it would be a very narrow one. We soon noticed, however, that many of the chalk blocks were unusually rounded, and that some of the potsherds, which were found in considerable quantities, were formed of finer paste than any that had been before met with on the west side of the camp; and a greater variety was observed in their ornamentation.

Besides coarse black potsherds fragments of not less than eight different pots were thrown out of the little pit (*see* Pl. XI, figs. 1 and 2). Some were single sherds; but others occurred in sufficient quantities to encourage the hope that enough would be recovered to lead to the restoration of at least one of the pots of which they formed part. This has since been partly accomplished in the case of a brown domestic vessel, 6 inches in diameter and 5 inches high, which is believed to be of a type more com-



Contents of Small Priar, Gussbury. 1/2 actual size except Figs 4, 9, 12, 15.



monly met with on the Continent than in this country.* (Fig. 4.)

A few bones of animals were found at different depths in the same pit, as well as several pebbles, two mussel-shells, and some burnt pieces of flint (fig. 11). Also a rubbing-stone, some flint flakes, and several large pieces of charcoal; and, quite at the bottom, a small iron hook with an interior cutting edge (fig. 7). A small portion of a wooden handle reduced almost to a state of dust still occupied the socket of the implement. The iron, though rusted, was in a fair state of preservation.

The potsherds, and other objects in the little pit, were so mixed together, and the fragments of the brown pot were met with at such different levels, that it seemed probable that the contents of the pit had been disturbed at some remote period. At the bottom, in two places, there were small heaps of black earth; and the chalk walls were covered with white mould, which the workmen said was always found where animal-matter had been buried. The little pit is of an oval shape, and measures 5 feet from north and south by 4 feet from east to west. Including the chalk blocks which covered it, in common with the ground around it, it is 4 feet 6 inches in depth.

After the pit had been cleared out, Mr. Ballard, of Broadwater, found a bone object with cross lines upon it. This led to a further search, when we recovered three other pieces, which on being fitted together formed a carding comb, the length of which with the handle, which tapers towards the end, would if perfect be about five inches; the teeth were wanting. The comb appears to have been made out of a rib of ox, and bears marks of fire (fig. 6).†

Further attempts to discover a shaft were now made between the small pit I, and shaft V, when various pieces of coarse pottery, some flint flakes, pebbles, burnt flint, one or two bones of animals, and some charcoal, were met with from 12 inches to 2 feet beneath the surface of the ground, 10 feet east of the shaft. Four other trial holes were opened without meeting with any remains; but subsequently some pebbles, potsherds, and burnt fragments of flint were met with near the surface in three places (*see* P. P. on Plan. Pl. X). The depression in the surface in one case led me to expect greater results.

A shaft or chamber, of which the height of the roof could not be ascertained, being known to exist on the south side of gallery C, on following the clue thus afforded, and noticing a small patch of dark grass, such as led to the discovery of the little pit just

* As the ornamentation was clearly a survival, the form may also be so.

† On further search part of a small terra-cotta ornament, perforated, and a fragment of small comb with one of the teeth, were also recovered from the same heap (figs. 3 and 5).

described, we dug a circular hole about 4 feet in diameter on the spot. From 8 inches to 2 feet beneath the turf two or three pebbles, many pieces of burnt flint (about the size of macadamised granite), some coarse potsherds, several pieces of hard sandstone, and numerous whole flints as well as flakes; were met with, also part of a leg-bone of calf or small ox, and a single piece of burnt clay. At 2 feet deep, the bottom proved so hard that Guiles, the foreman, thought that we had reached the natural chalk. The large number of flints and other remains which were found in this small hole, with other indications, led me to doubt whether this would prove so; but I did not like to break through the hard floor without advice. The doubt being shared by General Lane Fox, who visited the work a few days later, we broke up the chalk floor, which proved to be 7 or 8 inches thick, and found several fragments of brown and black pots—one of which has been partially restored. (*See* Plate XI, fig. 9,) also a portion of the jaw of a goat, and a large piece of rubbing-stone, besides several flakes, and small pieces of burnt flint and hard stone—in all 31 pieces of broken stone in this one pit. At the bottom there was a layer of black earth.

Subsequently, on cutting a section through the walls of this pit, it was found to be surrounded with a cist of concrete, about 12 inches thick, formed in the filling in of a shaft.* (*See* Plan, shaft VI, S.P. II.)

The possibility of these little pits being graves having early suggested itself, further search was made for dark green patches in the turf, which was rewarded by the discovery of two more pits (III and IV), 9 feet apart. One of these little pits (III), which like the rest was oval, proved to be only 3 feet 7 inches from north to south, by 3 feet 1 inch from east to west, and 3 feet deep. There was a slight rise in the ground over it, due to a quantity of chalk rubble which had been laid on the surface. The pit itself was sunk only 5 inches into the chalk. Its contents were fragments of two pots, one black and the other brown; two mussel shells, some birds' bones scorched, flint flakes, charcoal, one or two pebbles, and some burnt pieces of flint. Black mould was found at the bottom of this pit also.

The fourth small pit (IV) stood east and west. It was 5 feet long and 4 feet deep. Its contents were three dozen sling-stones; three pieces of burnt clay, on which General Lane Fox detected the impress of sticks or wattles (fig. 13); a terra-cotta bead, or whorl, $1\frac{1}{2}$ inch in diameter (fig. 8), of coarse clay, marked with semi-punctures; some rude flint implements (one

* Eight inches beneath the surface Mr. Rice, member of the Sussex Archaeological Society, who paid several visits to Cissbury, and gave me much assistance, found a worked flint implement embedded in the filling in of this pit. Others were found at a greater depth subsequently.

about 12 inches from the bottom); sherds of two kinds of pottery, red and black; flint flakes; a few fragments of calcined flint; a single oyster shell; some teeth of sheep, ribs of mouse or vole, and the bone of a small ruminant, polished, and stained by smoke, with indented marks upon it.* There was also, quite at the bottom of this pit, an iron object, which might possibly be the handle of a wooden stoop, rotten wood, almost in a state of dust, being associated with it (fig. 12). Two fragments of iron pyrites, much decomposed, were adhering to it. The iron was found to be highly magnetic.

In this pit there appeared to be two distinct heaps of black earth, one at the east end, and the other on the north side. In the earth at the east end I found a blackened sling-stone, remarkably regular in shape, like a hen's egg (fig. 14). It was the only pebble found in the lower part of the pit. This appears to be the more worthy of note, when it is remembered that 36 pebbles were found in the upper part of the same pit.

Black mould, of a sticky consistency, resisting the rain, still adheres to the east and north walls of the pit, up to about twelve inches from the floor.

Diversely from small pit II, which was partly filled in with flints, only three or four were noticed in small pit IV, but there were three in the wall of the cist at the east end.

The pit itself was filled with rubble and chalk débris. Amongst the small blocks I found a rounded, and apparently worked, piece of chalk, with a hole bored through the narrow end. Accidentally or purposely it bears a resemblance to the cranium of some animal. Subsequently Lord Rosehill, on visiting the excavations last November, picked up two more rounded pieces of chalk with holes in them, from the debris round S.P.I., where the carding-comb had been found. They were similar to one in his museum which had been found in Mr. Tindale's pit with the horns of *Bos primigenius*, and are pronounced to be loom weights (fig. 15).

To arrive at any correct conclusions regarding the use of these little pits, it appeared requisite to ascertain whether there were any galleries running in a north-easterly direction from shaft VI, which might account for the peculiar features in the plan south of the Cave Pit.

Returning, therefore, to shaft VI, we commenced a wide trench 4 feet deep, along its east side, from cist II, and then, following the chalk walls, ascertained that its size was 24 feet by 20 feet. This proved so considerable, that at the advanced

* Recognized at the meeting, by the President, as a bone of roebuck, which had been used to separate the threads in a loom.

period of the year at which we had arrived, I was obliged most reluctantly to postpone the work of excavation.

Considering the situation of the shaft (adjoining gallery C), and the fact that we probed the walls of the caves adjoining the space on the south side of it, without being able to detect the existence of galleries, it may very possibly prove to be a shaft without galleries like Mr. Tindale's pit. If so, though the absence of human bones in the small pits would still be a difficulty,* the evidence, on the whole, points to their being graves; and although some of the remains are of a later date than any assigned to the shafts and galleries, it should be remembered that there is reason to believe that the little pits have been disturbed, and that there may have been secondary interments. There appear to have been interments at Cissbury of an earlier date, without cists, on the same spot, and, if so, it is quite conceivable, or rather perfectly in accordance with what we know of the superstition of early races, that the miners would have objected to run galleries under graves for fear of the spirits.

Some of the earth from the floor of one of the small pits having been sent to Professor Rupert Jones, he has made the analysis which is appended. Dr. Gwyn Jeffreys has kindly determined the shells.

The excavations have been visited and inspected at different stages by members of the Society of Antiquaries, the Anthropological Institute, and other learned bodies. The following have spent more than one day on the Hill, or have paid several visits to the excavations: Lord Rosehill, Major-Gen. A. Lane Fox, Major Wisden (who has shown his appreciation of the importance of the work by the readiness with which he gave his permission to continue the excavations), Professor Rupert Jones, Mr. E. W. Brabrook, F.S.A., Mr. T. W. Cowan, Rev. Canon Gover, Dr. Kelly, Mr. R. B. Martin, Mr. J. J. Merriman, Mr. E. Rice, and Lieut. M. J. Harrison, R.N., to whom I owe thanks for corrections in the bearings of some of the galleries. Mr. James Fergusson, the Rev. James Beck, Mr. Dewing of Bury St. Edmund's, Mr. G. M. Atkinson, Mr. F. Petrie, Dr. Stevens of Andover, and Mr. J. E. Price, F.S.A., have also spent some hours in examining the pits and galleries. Many residents in the neighbourhood have taken considerable interest in the work; and I must not omit to thank Mr. Ballard for the tent he erected as a temporary museum and refuge, which I am sorry to say was twice levelled with the ground by gales, though pitched in one of the basin-like hollows, which it may be presumed were formerly used for shelter, though

* Since this paper was read, I have succeeded in detecting the presence of fatty matter in the black earth, which goes far to prove that it is the result of decomposed animal remains.

the British dwellings are generally considered to have been at the east side of the camp, where many fragments of pottery are found within 8 inches of the surface.

APPENDIX.

Contents of a small box of earth swept up from the bottom of one of the little pits.

1. Angular débris of chalk
2. Brown earth, which was sticky when washed.
3. Charcoal, abundant in minute fragments.
4. Small land shells, and fragments of larger land shells (*see list.*)
5. Vegetable rootlets, bracts, &c.
6. Fragments of bones (metacarpal of small deer), minute bones of mouse and vole.
7. Small fragments of oyster shells.
8. A few small fossil organisms from the chalk (*Polyzoa.*)
9. Fragments of small flint splinters.
10. A burnt piece of flint.
11. A piece of burnt sandstone. It was "upper greensand" with brown specks; the green grains having been oxidized, and cavities left where the sponge spicules were.

*Shells determined by Dr. J. GWYN JEFFREYS, F.R.S.,
February 1878.*

1. *Helix rotundata.*
2. " *Caperata.*
3. " *hiaspida.*
4. " *Cantiana.*
5. " *pulchella.*
6. *Bulimus obscurus.*
7. *Pupa marginata.*
8. *Vertigo pygmæa.*
9. *Clausilia rugosa.*
10. *Cochlicopa lubrica.*
11. *Achatina acicula.*
12. *Carychium minimum.*
13. *Cyclostoma elegans.*

All these species are now living in the district. The blind or eyeless, *Achatina acicula* is frequently found in old graves, being subterraneous in its habits. (*Note by Dr. Jeffreys.*)

DISCUSSION.

Major-General LANE FOX expressed his dissent from some of the views of the author's; he had examined the shafts and galleries carefully, and thought that there was no evidence of them having been inhabited. The evidence in favour of their having been filled up quickly after excavation was he thought, even stronger in this case than in some of those which had already been brought to the notice of the Institute; the shaft, also, was of more irregular form than the diagram might lead one to suppose, and resembled the others in all respects. The evidence of their having been excavated by people of the Stone Age remained the same as before. The small pits found in rubble of the shaft were undoubtedly of more recent date, but he did not believe them to be graves. The excavations in Mount Caburn, conducted by him, threw some light on the subject, as similar pits had been found there. Some fragments of clay moulded on to the form of wattling for huts which Mr. Harrison had shown him, were similar to fragments found in Mount Caburn, and showed that the pits were in all probability connected with habitations.

Mr. MOGGRIDGE suggested that the small pits may have been the equivalents of the rifle-pits of modern days; similar to those at the fine old camp on Mynydd Carn goch near Llandilo, so well placed there to assist in the defence of the entrances to that camp.

Mr. LEWIS thought that the absence of human bones, remarked on by General Fox, was not confined to this case; he was under the impression that attempts had been made in other cases to argue against the human origin of some stone implements on the same ground; at the same time the explanation offered for such absence in one case might not be applicable to another.

Professor RUPERT JONES's remarks on the subject were chiefly directed to the substantiation of Mr. Park Harrison's description of the small chalk enclosure ("cave") in one corner on the floor of the opened shaft, which certainly existed at the time of his visit. He thought the allusion made by Tacitus to the Belgæ having used such underground excavations for refuge was clearly applicable to such shafts and galleries as those opened at Cissbury, and strengthened Mr. P. Harrison's hypothesis that people subsequent to the original flint-diggers at times used these mazy passages for retreat from weather and enemies.

Mr. CARMICHAEL inquired whether, supposing the views maintained by Major-General Lane Fox in his communication on the Cissbury excavations were accepted as the correct explanation of their purpose, there was any other evidence of similar shafts and galleries being found elsewhere to have been made for the sole purpose of extracting flint implements.

Mr. F. G. HILTON PRICE said that although he had not been able to visit the excavations at Cissbury, he recognized from Mr. Park

Harrison's description great similarity in the outer pits recently opened there to those at Mount Caburn, and that the contents were likewise similar. None of the pottery or other objects exhibited could be assigned to a greater antiquity than late in the Romano-British period.

He did not consider that bodies buried by inhumation in the chalk during the Romano-British period would have entirely perished, as the author imagined they would.

The President, in thanking Mr. Park Harrison for his paper, expressed to Major Wisden, who was present, the obligation of the Institute to him for the facilities he had so kindly afforded towards the investigations at Cissbury. With regard to the ramifications of the pits, as shown on the author's plan, he could not suppose that they had originally any connection whatever with the purposes of concealment or defence. The height of the galleries was inconvenient for any such use, and, moreover, there were but few traces of occupation. He pointed out that the window-like openings in the walls of the galleries were in all probability made merely for the purpose of ascertaining their thickness, so that the old miners might know whether they were leaving supports of sufficient thickness to carry the weight of chalk above, but not so thick as to interfere with getting the greatest quantity of flint compatible with safety. The presence of stalactites in the pits seemed, however, to justify a belief that they had for some time been left accessible to the air, as without some means of escape of carbonic acid from the water holding the stalactitic matter in solution no deposit would take place. Sufficient air-passages might nevertheless be left without any intention of occupying the pits. With regard to the shallow pits described, he did not regard them as of a sepulchral character. The fact of other bones being preserved in them afforded an argument against the supposition that the human bones had entirely perished. There was, moreover, a certain amount of evidence of the spots having been occupied by the living rather than the dead, as not only was there the weaving-comb found there, as described by the author, but also several weights formed of chalk, and of the same character as those used in the ancient looms, and moreover one of the bones from Pit IV, probably a limb-bone of a roe deer, bore evident marks of long use for keeping threads apart, the upper and lower surfaces being polished and scored by the threads. He thought that these pits could not have been graves, nor were they deep enough for shelters. The amount of bones and other relics found in them hardly justified their being called refuse pits, but they might in some manner have been connected with habitations, either as means of drainage, as fireplaces, or as for some other use.* As to the date of these pits, he thought it might be placed

* Major Godwin Austen has since mentioned that some of the tribes of India sink a pit in the middle of their huts, on the edge of which they sit. The sketch, which he has kindly supplied, shows some Battes of Skards seated on the edge of a pit which has been sunk to receive a lathe used for the manufacture of pots of stone, such as are in use all over Ladak and Battistan.

somewhere towards the fifth century. Some of the pottery much resembled in form that found with Merovingian interments, while other pieces were more Roman in character.

Mr. Harrison regretted that Major-Gen. Lane Fox had not heard the paper read, and that he had been unable to visit the excavations at an earlier stage. The plan had necessarily been taken near the floor of the shaft in order to show the galleries, and the walls of the presumed cave hut. There was no sufficient evidence that the galleries had been used for habitations in the ordinary sense of the term; but the sharpness of the chalk along the walls was no proof that they had not been made use of, for a vast number of persons have visited them, and Mr. Harrison and the workmen have spent many hours, and indeed days, in the galleries, without rubbing off the angles of the chalk, which, moreover, had been formerly protected inmost places by rows of chalk débris. The roofs, floors, and jambs of openings between galleries, were in places much rubbed.

As regards the little "windows," they differed in size and character altogether from the doorways or openings leading to surrounding galleries. This would at once be seen on visiting the excavations.

The question whether the little pits were used for interments, would, Mr. Harrison believed, by-and-bye be so determined. The state of the objects found in them accorded with funeral practices elsewhere; their broken and burnt condition being due to the idea that they would thus be rendered fit to accompany the deceased to another state of existence.* Some of the objects (as for instance the rubbing-stones, and carding-comb,) being in an undecayed state, it would have required the exertion of some considerable force to have broken them into fragments.

The site appeared to be far too much exposed for wattle-huts.

Explanation of Plates (X and XI).

PLATE X.

1. Plan showing the several shafts and galleries in section at a level of one foot above the floor line.

The shafts that were not cleared out (II and III) or had been filled in (I) are lightly shaded. Shaft VI, at the time the paper was read, had been excavated to a depth of 4 feet only. It has since been found to be 30 feet deep. The position of the skeleton of a flint worker is indicated in its centre. The form of

The Nagas sink pits of much the same character for the reception of their looms, and sit with their feet below the surface of the ground when weaving. When the work is compact, the Nagas of the N.E. frontier store their grain in pits 4 to 5 feet deep, sunk in the ground, and covered over with a slab of stone, or a piece of matting plastered over with earth. The opening at the surface is just large enough to admit a boy, and the pits are made to expand towards the bottom. These pits are as often outside the houses as inside, and are difficult to find by strangers, so that in war on the recapture of a village, store of provisions are frequently found untouched.

* Tylor's "Prim. Cult." vol. i, p. 491, &c.

the "Cave Pit" (shaft II) at the level of 5 feet above the floor is shown by a dotted line.

S. P. I-IV, are small pits in which the objects shown in Plate XI, were found.

P. P. show the spots where potsherds, bones of animals, flakes, burnt flints, and pebbles, were found from eighteen inches to two feet beneath the surface.

PLATE XI.

Objects found in small oval pits, I-IV.

Figs. 1 & 2. Fragments of pots found in S.P. I.

- " 3. Pierced fragment of terra-cotta ornament, from ditto.
- " 4. Pot of brown ware from ditto.
- " 5. Fragment of comb from ditto.
- " 6. Portion of bone carding-comb from ditto.
- " 7. Iron hook from ditto.
- " 8. Terra-cotta bead (or spindle whorl?) from S.P. IV.
- " 9. Food vessel of fine red ware from S.P. II.
- " 10 & 11. Specimens of hard rubbing stone, and burnt flint, found in all the small pits, broken into small pieces.
- " 12. Iron object found in S.P. IV.
- " 13. Portion of "dab" with impression of wattles, burnt red, from ditto.
- " 14. Sling stone found at the bottom of ditto.
- " 15. Loom weight of chalk, found in S.P. IV.

Since the foregoing paper was in type the Directors of the Institute have received a short communication from Mr. Harrison, descriptive of his later researches. It is here appended, in order that the account of his work at Cissbury may be brought up to the latest date, and thus rendered as complete as possible.

POSTSCRIPT, APRIL, 1878.

SINCE this paper was read, whilst engaged in excavating shaft VI, in order to ascertain whether any galleries ran from it under the small pits adjoining, we found a skeleton in the centre of the shaft, 16 feet beneath the surface. It was lying on its right side, in a contracted position, with the face to the east; and it was surrounded with a single row of chalk blocks, and large flints. Outside of this quasi-cist, and immediately behind the remains, there were six small flint implements, and a larger one lay near the head in front. Eight snail shells (*Helix nemoralis*), principally white, with an unpierced disk of chalk, $\frac{3}{4}$ in. in diameter, and a single pebble, bearing marks of fire, were the only other objects that appeared to have been interred with the body. The skeleton has been pronounced by Professor Rolleston to be that of a man under five feet in height, and about twenty-five years old. Above it there was chalk rubble, and over this a layer or seam of red

clay, which sloped down from all sides of the shaft to a depth in the centre about 14 feet. From this level to the surface there were alternate layers of fine chalk *débris* consolidated with water; and small fragments of chalk, about the size of macadamised stone—the bands or layers being from 4 to 8 inches thick. It was in the upper part of the fine concreted chalk, that the small pit had been sunk, which first drew attention to this shaft. (See p. 424.)

At 20 feet from the surface, on the north side, we found several pieces of red deer's-horn scorched with fire, and also some calcined and smoked chalk blocks, and a bone of ox. On the south side, at the same level, there was a heap of flint flakes, between 300 and 400 in number, with a single flint implement, slightly bleached, lying near them, with the point broken off. Four masses of iron pyrites were found within a foot or two of the flakes.

The filling in of the shaft below the skeleton appeared to be formed of the same description of *débris* that was left by the old miners in the galleries, viz., chalk of all sizes, including some large blocks which were piled up round the central heap. The workmen thought there could be no doubt that it was deposited there when the galleries were originally excavated.

At 30 feet deep, galleries and caves were found on all four sides of the shaft, the walls of which were remarkably straight, and square, with more the appearance of freestone than chalk. There were five galleries, three running south and the others northwards, besides five caves, which extended only about 6 feet from the shaft in an easterly and westerly direction. Two of the caves on the west side and one on the east side were quite free from chalk *débris*, excepting at the entrances, and had all the appearance of having been used for shelter. Between the two caves on the west side there was an opening in the chalk wall, 1 foot 3 inches high, and 1 foot 2 inches wide; and in the southernmost of the two, three square chalk blocks were placed upright against the walls. They may perhaps have been used to fill in the opening, in the way described in gallery D.

Several deer's-horns, which do not appear to have been used as tools (having several branching tines on them) were found in two of the caves. There were also small cup-shaped marks on the walls, and some distinctive lines made with a flint instrument over the entrance of a gallery, much like those that have been found in three other pits. They have been carefully cut out and photographed.

A gallery ran northwards some 16 feet under gallery C, and then turned westwards. Its extent could not be ascertained,

owing to the dangerous state of the roof. It was the first instance that had been met with at Cissbury of a gallery running underneath other galleries. The idea that had been entertained that shaft VI was older than the "Cave Pit" and its galleries must, I think, be given up.

It should be mentioned that Dr. Muirhead of Cambuslang, joined in the exploration of shaft VI; and Professor Rolleston, who has undertaken the description of the skeleton, bears with him half the expense of the excavation.*

JANUARY 8th, 1878.

HYDE CLARKE, Esq., *Vice-President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same.

FOR THE LIBRARY.

From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Vol. XII, No. 3.

From the EDITOR.—Matériaux pour l'Histoire de l'Homme, Sept. 1877.

From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. V, Nos. 3 and 4.

From Prof. F. V. HAYDEN, Hon. M.A.I.—United States Geological Survey of the Territories. Vol. IV; Bulletin ditto. Vol. III, No. 4.

From the LEEDS PHILOSOPHICAL SOCIETY.—The Worth of Life, by Wm. Lord Archbishop of York.

From the SOCIETY.—The Journal of the Bombay Branch of the Royal Asiatic Society. Extra number. Vol. XII, No. 34A.

From the SOCIETY.—The Journal of the Asiatic Society of Bengal. Vol. XLVI, Part 2, No. 2; Index to Vol. XLV; Proceedings, ditto. No. VI, June 1877.

From the ACADEMY.—Bulletin de l'Académie Impériale des Sciences de St. Petersburg. Tome XXIV, No. 3.

* I am very grateful to Dr. C. Kelly, of Worthing, for his assistance in collecting, and taking charge of the remains of the flint-worker. It is due to his aid that only some of the smallest bones of toes and fingers are wanting.

From the INSTITUTE.—Proceedings of the New Zealand Institute. Vol. IX, Part 2; Index, ditto. Vols. I-VIII.

From the ACADEMY.—Proceedings of the Cracow Academy of Sciences. Vol. I, 1877.

From the EDITOR.—Nature (to date).

From the EDITOR.—Révue Scientifique. Nos. 24 to 27, 1877-8.

From the SOCIETY.—Journal and Proceedings of the Royal Society
 * of New South Wales. Vol. X, 1876; Report of Council of Education for 1876; Kamilarói, and other Australian Languages, by the Rev. William Ridley.

MAJOR-GENERAL A. LANE FOX, F.R.S., exhibited and read a paper on a collection of some 150 objects from the Andaman and Nicobar Islands, presented to him by E. H. Man, Esq., letters from whom were also read.

CLASS—ETHNOLOGY.

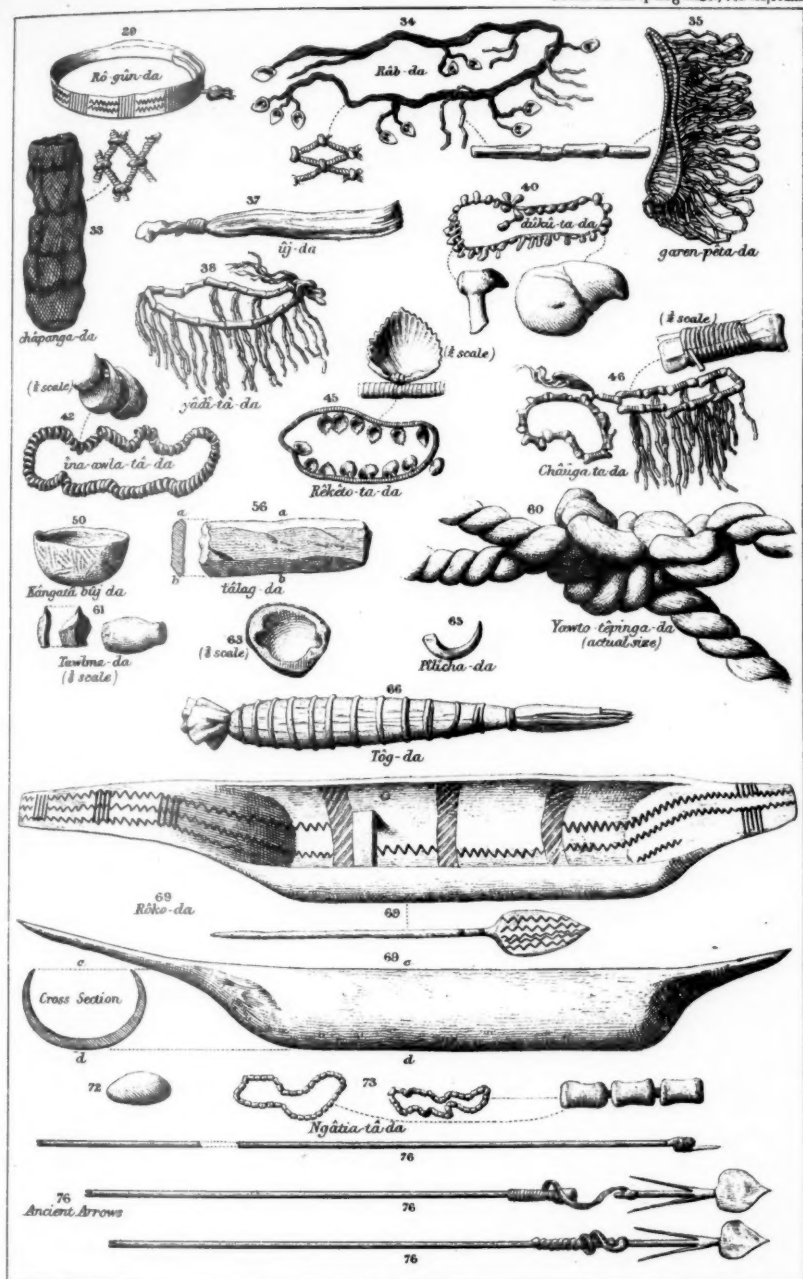
Observations on Mr. MAN'S collection of Andamanese and Nicobarese objects by MAJOR-GENERAL A. LANE FOX, F.R.S.

The objects enumerated in Mr. Man's list, and so carefully described by him, afford us the first opportunity that we have had of comparing the productions of these primitive people with those of other races, for although the Institute and the Ethnological Society before it, have received numerous communications on the subject of these Islands, some of them of considerable interest, none have up to the present time conveyed to us so much detailed information upon the construction and uses of their weapons and implements. And without such details, comparisons are only liable to mislead.

So little indeed has been the intercourse with these people, owing probably to their inveterate hostility to Europeans, that I find on turning to Mr. Herbert Spencer's "Descriptive Sociology" * nothing is recorded of the Andamanese under the head of Arts except that they broil their meat over a kind of grid made of bamboos.

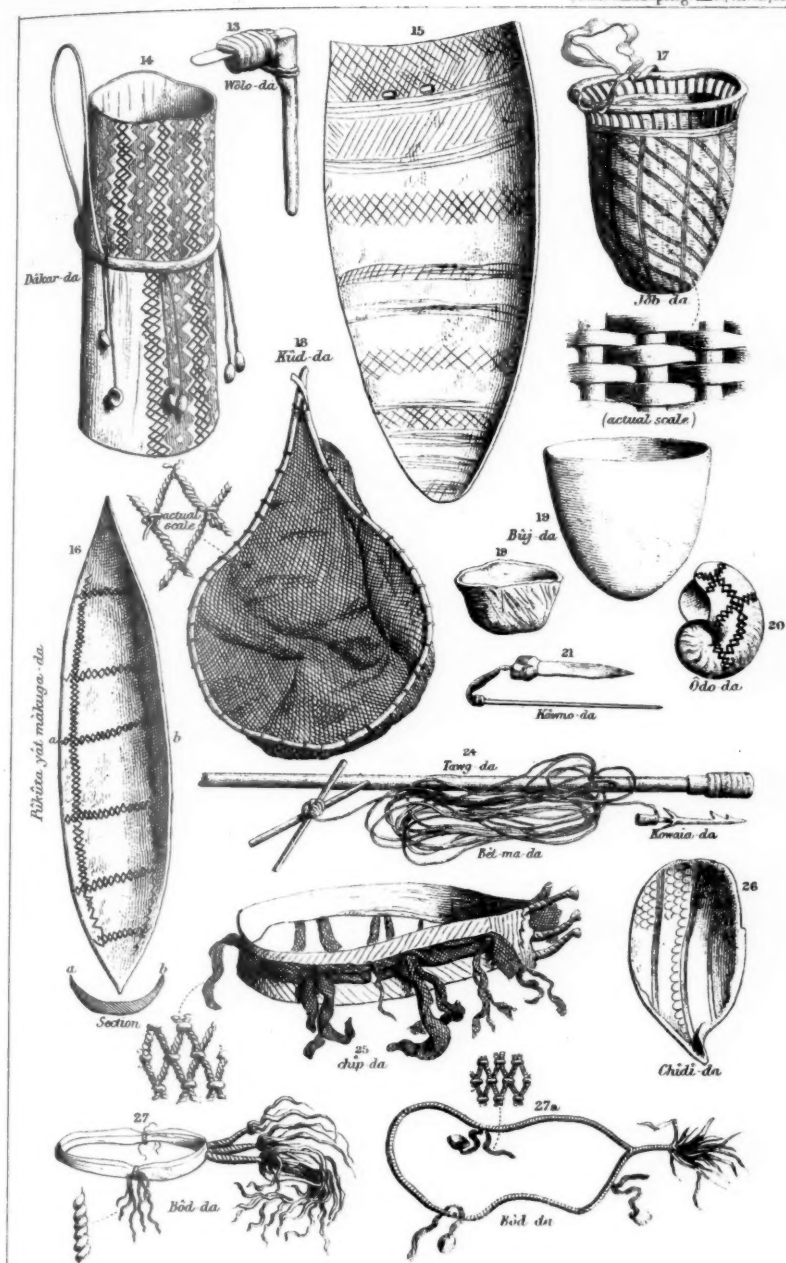
It may be useful, before speaking of any points of interest arising from an examination of the present collection, briefly to allude to some of the questions which have been mooted as to the position of these islands and their probable connection at a former period with the mainland.

* Descriptive Sociology, or groups of sociological facts classified and arranged, by Herbert Spencer, No. 3, p. 49.

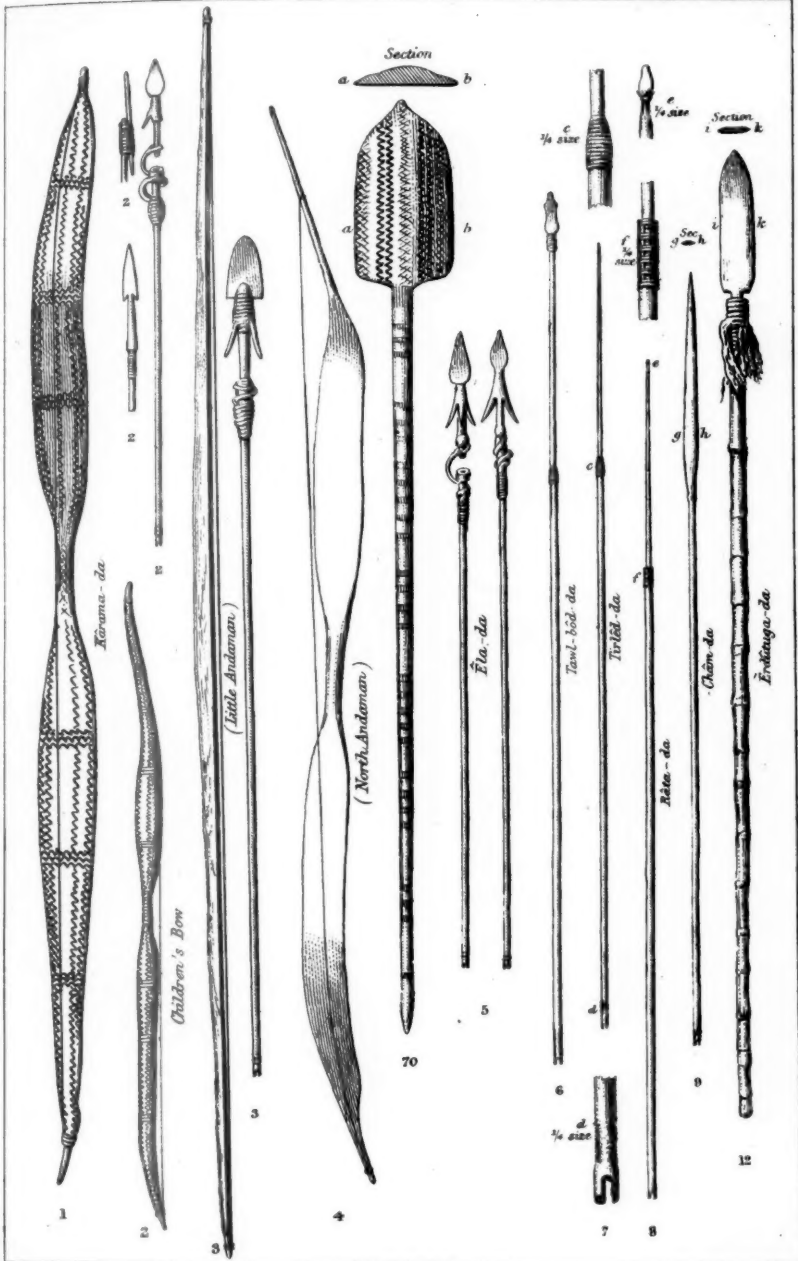


J.P. & W.R. Emslie, London.

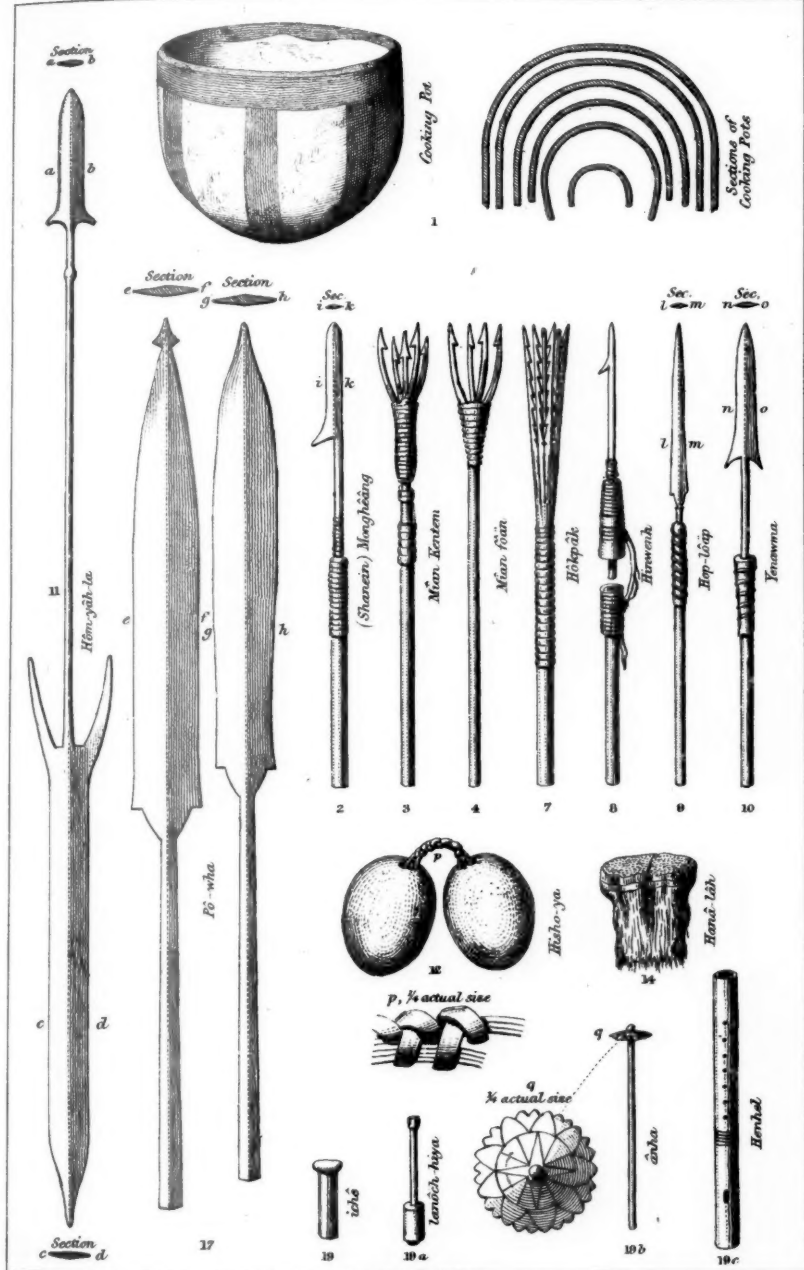
ANDAMANESE OBJECTS,
obtained by Mr E.H. Man.



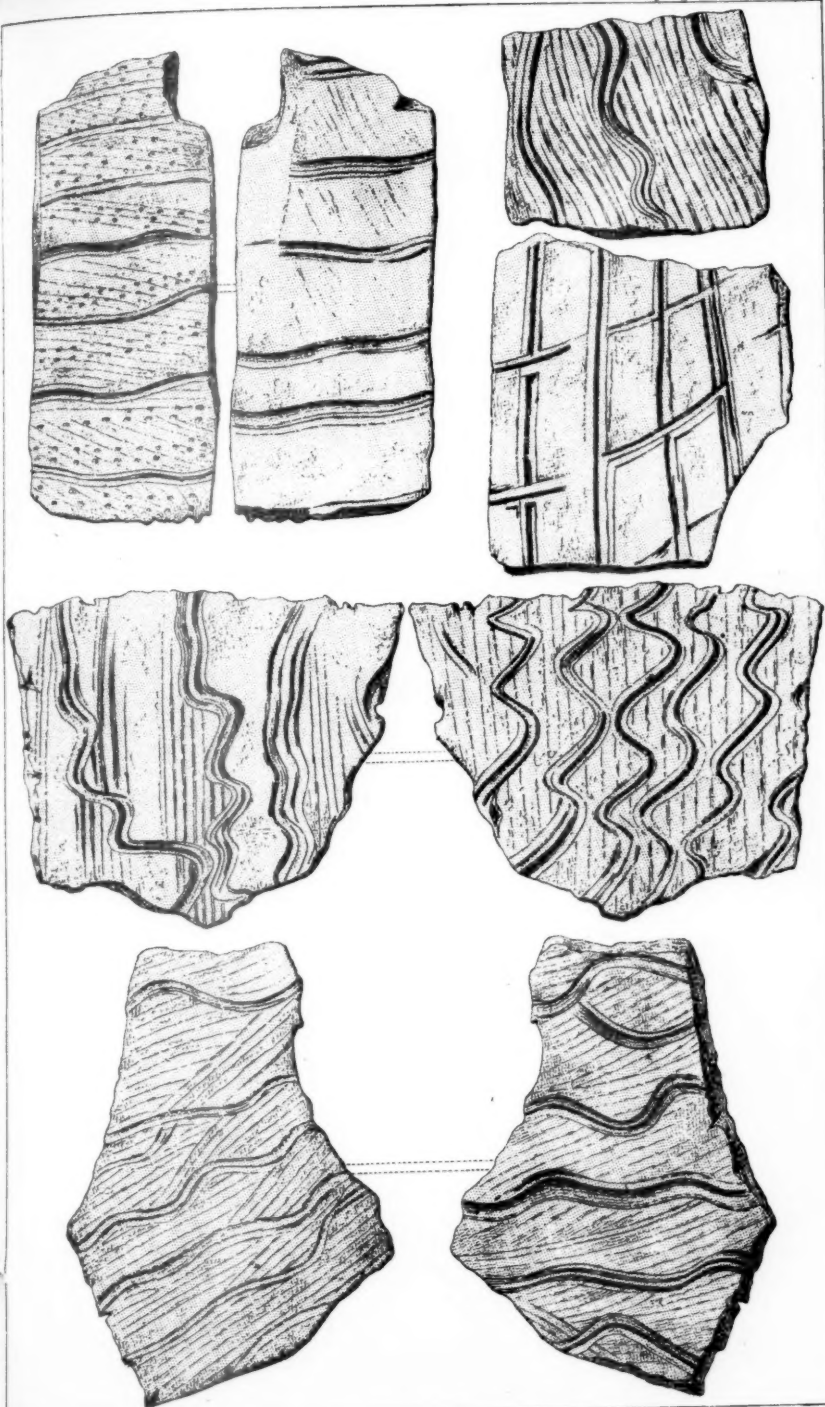
ANDAMANESE OBJECTS,
described by M^r H. May



ANDAMANES OBJECTS ,
obtained by M.E.H.Man.







J. P. & W. R. Enslin, London

FRAGMENTS OF ANDAMANESE ORNAMENTED POTTERY
from a Kitchen Midden in Port Blair Harbour.

One view is that referred to by Mr. Dobson, in his valuable paper on the Andamans and Andamanese,* viz., that these islands, forming the middle portion of a series of smaller islands and shoals lying between Cape Negrais in Burmah, and Acheen Point in Sumatra, were connected with the main land of Burmah and the Malay peninsular at a comparatively recent geological period, when the continent of Asia extended far southwards beyond its present limits, and included the Islands of Sumatra, Java, and Borneo, and that the Andamans then formed part of a large island in the delta of the Irrawaddy, which emptied itself into the Bay of Bengal at some distance from its present mouth. In proof of this, it has been shown that almost every species of animal inhabiting these islands is identical with those on the continent of Burmah, and above all, that almost every species of fresh-water fish found on the islands, one species or variety only excepted, is the same as found in the fresh waters of Burmah, proving not only a former connection, but further, that the islands have not been submerged since they ceased to form part of the continent of Asia, for submersion must necessarily have been attended with the destruction of the fresh-water fish.

Some difficulties, however, appear to stand in the way of accepting this view in so far as the theory of the delta is concerned, and its relation to the distribution of man by geological changes, for in addition to the fact that one of the islands contains a mountain 2,400 feet high, it has been conjectured by Mr. Theobald, whose work on the Geology of Pegu† affords the most recent information on the geology of this district, that the whole of the alluvium of the present delta of the Irrawaddy for a distance of 140 miles from its mouth, and extending over a breadth of about the same distance at its southern extremity, is of marine origin, showing that the sea must in Pleistocene times have extended inland as far as Prome, and that the delta is still rising. If so, it could not within the human period have afforded any closer land connection with the Andamans than exists at the present time. According to Mr. Theobald's view the delta of the Irrawaddy and the Gulf of Martaban, which is the continuation of it, forms part of a trough or synclinal bend caused by lateral pressure, which has at the same time upheaved the two ranges of the Yomah mountains, forming the eastern and western boundaries of the valley, as well as those other ranges which in this region run parallel to them. As the line of islands and shoals, of which the Nicobars and the Andamans form part, are

* "On the Andamans or Andamanese," by G. E. Dobson, B.A. *Journal of the Anthropological Institute*, vol. iv, p. 457.

† "On the Geology of Pegu," by William Theobald, Esq. *Memoirs of the Geological Survey of India*, vol. x, Pt. 2.

distributed in the direct line of prolongation of the western Yomah range, which runs along the coast of Arracan and Pegu, and forms the anteclinal western boundary of the Irrawaddy valley, it would appear probable that they may be attributed to the same geological causes combined with these volcanic agencies which are rife in these parts. If these views are correct, it would certainly appear that it is upon a north and south line rather than across the Gulf of Martaban to the eastward that we should look for the land connections by which the Andaman islanders may have arrived at their present destination, and this is also the direction pointed out by the physical peculiarities of the people themselves which connect them with the Negritos of the south and with that great family of Black races which has its home in the southern hemisphere rather than with the Mongols of the east and north.

The ethnic affinities of the Andamanese have long been a puzzle to anthropologists. Pritchard many years ago pointed out their relationship to the Samangs of the Malay peninsula and the inhabitants of the Penang Islands in the Archipelago of the Philippines, including them under the head of "Pelagian Negroes," with the inhabitants of the northern coast of New Guinea, New Britain, New Ireland, the Louesiade and Solomon Isles, New Hebrides, New Caledonia, and Tasmania.* Mr. Wallace and others whilst recognising the classification laid down by Pritchard, gives them a more limited area, including them, with the Samangs and the aborigines of the Philippines, as a distinct branch of the Negrito race. There are nevertheless differences which have to be considered, and Professor Owen, after the examination of a skeleton submitted to him by Dr. Mouat, was unable to recognise any anatomical grounds for connecting it with the people of any existing continent.† If it were true, as supposed by Mr. Latham, that their language is connected with the Burmese of the opposite continent, it would only prove, as has often been proved before, that Race and Language do not of necessity run in the same channels, but in truth little is known as yet of the language of these people, and all which has been published by Mr. Man and Lieutenant Temple relates to the Bôjingjida and Bôgjiab tribes, nearest to the European settlement.‡ Each of the nine tribes mentioned by Mr. Man speaks a different language, "and a native of North Andaman is as utterly unable to make himself understood by a

* Pritchard, "Natural History of Man." Third Edition, p. 346.

† "On the Osteology and Dentition of the Aborigines of the Andaman Isles," by Professor Owen, F.R.S. *Trans. Ethnological Society; New Series*, vol. ii, p. 34.

‡ "The Lord's Prayer translated into Bôjingjida," by E. H. Man, with Preface and Notes by R. C. Temple, Calcutta, 1877.

native of South Andaman as an English peasant would be by a Russian; * they are not dialects but distinct languages, although they have a common origin and structure; they are agglutinative, and if they have any affinities, which appears doubtful, Mr. Man and Lieutenant Temple are inclined to think they lie in the direction of the Australian, Dravidian and Scythian languages, which they resemble in certain structural peculiarities, such as the use of post-positions instead of pre-positions in the use of two forms of the first person plural, one inclusive of the party addressed, and the other exclusive, and generally in the agglutinative structure of the words and in the position of words in a sentence.† In the list of objects given by Mr. Man the termination *DA* is applied to all inanimate things as well as to all animate things not human, to supernatural objects, and all abstract words.‡

An examination of three skulls by Professor Owen and Mr. Busk § showed that the proportionate breadths were as follows, viz., 830—776—828, by which it will be seen that two would be regarded as brachicephalic, and one dolichocephalic. In this respect they differ from the majority of the Negrito race; but, on the other hand, several skulls of Negritos from the Island of Luzon, measured by Professor Virchow, || gave relative breadths of 80·8 to 90·6, which, if they were of the pure breed, shows that brachicephaly is not unknown amongst the Negritos.

The height of the Andamanese has been variously given, but all agree as to their low stature. Mr. St. John makes them 5 ft. ¶ Dr. Charles Smith from 4 ft. 10 in. to 5 ft., the females being under 4 ft. 10 in. ** Mr. G. E. Dobson says that none of the tribe he visited exceeded 5 ft. 4 in., and that the females were remarkable for their small size.†† They appear to exceed in stature some of the other Negrito tribes. Pritchard, on the authority of Captain Gabriel Lafond, gives the height of the Negritos of the Island of Lasso at a little above 4 ft., nearer to 4 ft. than 4½, and says that they resemble the natives of Luzon.‡‡ Wallace says the Samangs average 4 ft. 6 in. to 4 ft. 8 in.

* *Journal of the Anthropological Institute*, vol. vii, p. 106, where a map shewing the distribution of the tribes is given.

† Lord's Prayer. p. 29.

‡ Lord's Prayer. p. 24.

§ "Description of two Andamanese Skulls," by George Busk, F.R.S. *Trans. Ethnological Society*, vol. iv; *New Series*, p. 205.

|| Peschel, "Races of Man," p. 340.

¶ Sir E. Belcher on the Andamans. *Trans. Ethnological Society*, vol. v, *New Series*, p. 45.

** *Trans. Ethnological Society*, vol. iv; *New Series*, p. 210.

†† G. E. Dobson, "On the Andamanese." *Journal of the Anthropological Institute*, vol. iv, p. 464.

‡‡ "Pritchard's Natural History of Man," p. 348.

In point of height the Andamanese appear to correspond most nearly to the Fuegians, who average from 4 ft. 10 in. to 5 ft. 6 in., the women being also relatively small and not exceeding 4 ft. and a few inches.* Colonel Albert Fytche† says that the Andamanese have not the projecting heel of the African negro, but on the other hand Mr. Busk, on the authority of Dr. Charles Smith, says that the heels project slightly behind.‡ Dr. Mouat says that they are not woolly headed,§ but their hair is more usually described as woolly. Colonel Fytche says it is unlike the so-called woolly hair of the negro, but grows conspicuously in separate detached tufts.|| In the case of the Papuans it has been shown by Dr. Comrie, Sig. D'Albertis, Mr. Moseley and others¶ that the tufted appearance of the hair is the result of the mode of growth in spirals, and that when the head is shaved it is found to grow uniformly over the scalp. As the Andamanese women habitually shave their heads it will be easy for future observers to ascertain whether this applies to them also. The samples of hair sent by Mr. Man, and now exhibited, are distinctly in small tufts, but it is only by an examination of the scalps that the question can be determined. In point of colour the specimens now exhibited vary from jet black to dark red, and correspond to the patterns marked 48 and 42 in Mr. Broca's tables.** The skin is described by Dr. Mouat as remarkably black and lustrous. Colonel Fytche says it is not deep black but rather of a sooty hue. Herbert Spencer in his "Descriptive Sociology" above quoted describes it as jet black. Dr. Smith says it is black, and shiny as if polished with lamp black, and Mr. St. John says it is jet black. Mr. Man has been furnished with a copy of our "Notes and Queries," and he will doubtless be able in a future communication to give the exact varieties of shade observable according to the numbered patterns,

* W. P. Snow, "On the Wild Tribes of Terra del Fuego." *Trans. Ethnological Society, New Series*, vol. i, p. 263. Herbert Spencer, "Descriptive Sociology," No. 3, Table 1. J. G. Wood, "Natural History of Man," vol. ii, p. 515.

† Col. A. Fytche, "On the Aborigines of the Andaman Isles," *Trans. Ethnological Society*, vol. v, p. 240.

‡ G. Busk, "On Andamanese Skulls." *Trans. Ethnological Society*, vol. iv, p. 20.

§ "Adventures and Researches among the Andamanese Islanders," by F. S. Mouat, p. 329.

|| A. Fytche, "Aboriginees of the Andaman Islands," *Trans. Ethnological Society*, vol. v, p. 210.

¶ "Anthropological Notes on New Guinea," by Dr. Comrie, R.N., *Journal Anthropological Institute*, vol. vi, p. 105. Sig. S. M. D'Albertis' "Travels in New Guinea," *Journal Anthropological Institute*, vol. vi, p. 216. H. N. Moseley, "On the Inhabitants of the Admiralty Isles." Discussion. *Journal Anthropological Institute*, vol. vi, p. 421.

** "Anthropological Notes and Queries," published by the British Association, Stanford, Charing Cross.

and strike an average. In regard to features, Mr. St. John says they vary in a most extraordinary manner, and that some have almost hooked noses.* Dr. Mouat says they are not prognathous, "quite unlike the African negro,"† but Dr. Smith says "the African features are well developed.‡ Colonel Fytche says that the "forehead is well formed and not retreating, neither are the lips coarse and projecting, and the nostrils by no means large." The difficulty of establishing any uniform standard of comparison for features must always be very great if not insurmountable.

With such discrepancies as these before us we may be excused for withholding any definite judgment as to their origin until more accurate measurements can be obtained. Nor does our knowledge of their moral character rest upon more certain data, their implacable hostility to strangers has hitherto stood in the way of all friendly intercourse, and we have no means of ascertaining to what extent they may have been justified by aggressions made upon them from without. Mr. Man, on the other hand, who is one of the first Europeans who has established amicable relations with them, describes them as a truthful and well-meaning people, and says that they suffer morally by their contact with the whites.§

It has been made a reproach to them that they are "naked and not ashamed." That they are naked, according to the European acceptance of the term, admits of no doubt, but to what extent they may have reason to be ashamed of it may be questioned. There is nothing inherently indecent in the human form, and as long as certain parts remain covered, modesty need suffer no abasement in cases where climate and the want of suitable covering make it expedient to remain nude. Dr. Mouat has shown that covering the body with clay affords the best and only escape from the vermin with which the forests abound, and this is confirmed by Mr. St. John, who, after describing the state of his shirt, "then tinted a lovely red, resulting from their frequent embraces," says "this red is the only thing one has to fear from them, as they are quite free from parasites, not having a stitch of clothing or hair on their bodies."

If it were true, as has been stated on the evidence at the time available, that "any rudiment of cincture relates solely to convenience of suspension of weapons and other objects," the case would be different, but an examination of the waist-belt called BÔD-DA, No. 27 (Pl. XIII), shows clearly that it is con-

* *Trans. Ethnological Society*, vol. v, p. 45.

† Mouat, p. 329.

‡ *Trans. Ethnological Society*, vol. iv, p. 210.

§ See his letter following this paper.

structed with a view to propriety, and Mr. Man says that it would be considered indecent to appear without one. We ought, therefore, I think, to be careful how we too hastily assume, from external appearances, the absence of all the characteristic sentiments of humanity on the part of a primitive people without due regard to their customs and surroundings. It is easy to understand how in a tropical climate, and a low condition of textile appliances, cleanliness may be best combined with Godliness by reducing the clothing to the smallest conceivable amount.

Lying more especially has been said to be a vice inherent in all the lower races of mankind, and that such is the case with savages when in contact with Europeans appears to be established on sufficient evidence, but falsehood is a weapon which in all phases of society has been resorted to by the weak against the strong. When we have acquired sufficient knowledge of the language of aborigines to be able to appreciate their lying tendencies, the causes which operate in producing the evil complained of have probably been for some time in force, and may have resulted not so much from any congenital obliquity on the part of the weaker people as from our own overbearing tyranny and injustice towards them.

The question now arises, can we, with the accurate information given us by Mr. Man, establish any social connection with other races of mankind by means of their arts and implements? In their habits, Mr. Dobson truly says, no less than in their physical peculiarities as described by Professor Owen and Mr. Busk, they show no connection with the African negroes, who have far surpassed them in the perfection of their arts. To the Veddas, Sontals and Coles of India and Ceylon, Dr. Mouat observes that they possess not the slightest resemblance whatever.

Perhaps the best course will be to go over the list which Mr. Man has furnished, and with the objects before us endeavour to ascertain whether any resemblances can be traced.

With regard firstly to their bows, No. 1 (Pl. XIV), the peculiar flattened S-shaped form, curved towards the firer in the upper part as held in the hand, and to a slight extent the reverse way at the bottom, resembles that used in Mallicollo, one of the new Hebrides, and in New Ireland. A bow of the same form, from Savage or Banks's Island, is in the Christy Collection, and the ordinary bow in use by the Japanese somewhat resembles it, being unsymmetrical in its two halves. The effect of this form, Mr. Man says, is to cause the string, when it is fired, to be arrested by the lower or convex part, and thereby to save the hand from injury; but this I hardly think can be regarded as the reason for the adoption of this form which ought I imagine

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he sought rather in some peculiarity connected with the origin of the bow. I have elsewhere in the catalogue of my collection at Bethnal Green,* stated my view as to the origin of this particular form of bow which I believe to be derived from the bow trap. It would be of interest to know whether such bow traps are used in the Andamans; they are of common use in the Malay peninsula. The flattening and expansion of the two halves of the bow is no doubt to be attributed to a want of elasticity in the wood, as it is not adopted with the bamboo bow of the little Andamans No. 3 (Pl. XIV). A similar expansion of the two halves of the bow is seen in the bows of the Indians of the north-west coast of North America. The *wamera*, or throwing-stick, of the Australians, to whom the bow is unknown, shows a similar expansion of the shaft, given it probably to increase its elasticity, and, like the Andamanese bow, various degrees of expansion are seen in the different specimens. According to Dr. Mouat, the Andamanese use their bows with effect at 40 yards. The small children's bows, No. 2 (Pl. XIV), are mentioned by the Sepoy, who passed some time with them, as being used by the boys up to eight years of age, when they take to the large bow. It would be desirable to ascertain whether the Andamanese have any knowledge of the *wamera* (throwing stick).

Harpoon arrows or spears, ÉLADA-DA, No. 5 (Pl. XIV), are perhaps amongst the earliest and most universally employed weapons of savages. In my Bethnal Green catalogue† I have arranged them in four classes according to the degree of perfection attained in the construction of them. In this second stage in which the harpoon head is fitted into a socket in the shaft and connected with it by means of a loose thong, the harpoon is used by the Australians and the Fuegians, and similar ones are also found in French caves of the Reindeer period. We also learn from Mr. Dobson ‡ that the use of the harpoon arrow is not confined to fishing, but that land animals when pierced by them are prevented from escaping by the loose shaft becoming entangled in the brushwood; hence probably their universal adoption by races that live by hunting.

Arrows, TAWL-BÔD-DA, No. 6, TRÎLÊD-DA, No. 7 (Pl. XIV), also Nos. 10 and 11.—I have suggested, in my catalogue§, that the fore-shafts of hard wood, so common in the arrows of many countries, are the survivals of the hardwood points with which they were originally armed, that is previously to the employment of stone or iron for pointing them; this view is strengthened by the specimens of Andamanese arrows before us,

* Catalogue of the Anthropological Collection at Bethnal Green. By Col. A. Lane Fox. Parts I and II, p. 47.

† P. 124.

‡ *Journal of the Anthropological Institute*, vol. iv, p. 466.

§ p 87.

in which we see the TÎRLÊD, No. 7, in its primitive state, and the TAWL-BÔD, No. 6, which is nothing but a TÎR-LÊD, with an iron point obtained in modern times from wrecks added to it, and both are employed at the same time for different purposes. Arrows with wooden fore-shafts are rare in Africa, but universally employed in the Asiatic Archipelago. The absence of feathers on the Andamanese arrows is of less value as evidence of connection, feathers not being used as a rule either in Africa or in the Pacific, but they are almost invariably employed on the continent of Asia. Neither is the notch at the base to receive the string of any use in determining connection, as it is employed in some parts of the Asiatic and Pacific Islands and not in others. Many of the Andamanese arrows are scored at the base, outside the notch, to enable the thumb and forefinger to grip it more firmly. This mode of assisting the grip is in common use with all the hand weapons of the Australians and is used on the arrows of several races, amongst which are arrows so scored from Central America, New Hebrides, and Solomon Isles, and the same scoring is made at the junction of the fore-shaft with the cane, to give firmness to the binding with which these two parts of the arrow are joined together. Mr. St. John says,* that the Andamanese arrow is held between the thumb and the second joint of the forefinger in the manner suggested by the mode of roughening this part of the arrow. The mode of binding on the fish-bone barbs, by means of fibre, assisted by wax or other sticky substance, KÂNGATÂ-BÛJ-DA resembles the Australian and Tasmanian practice. The use of the CHAM-DA arrow, No. 9 Pl. XIV, for ornament and not for use, appears to require further investigation, and is probably a survival of some kind.

It would be very desirable to ascertain whether the blow-pipe is known to the Andamanese, and if not, whether any suitable material is available in the islands. This weapon is employed on the continent of Asia all round the Andamans.

The adze, WÔLO-DA, No. 13 (Pl. XIII), being of iron, affords no grounds for comparison, as it must necessarily be of recent introduction. But it would be desirable to ascertain what means were employed by the Andamanese for scooping out their canoes, and other like purposes, before iron was introduced or became available through wrecks on the coast.

It is worthy of being noticed in connection with this subject that stone adze-blades of a peculiar form, called MO-JIO by the Burmese, have been found in the Irrawaddy valley, and described by Mr. Theobald.† They consist of flattened blades of some hard

* *Trans. Ethnological Society*, vol. v, p. 49.

† "Memoirs of the Geological Survey of India," vol. x, pt. 2, p. 167.

sub-schistose rock or fine grained slate with polished surfaces, having a rectangular section, flat on the under side and bevelled to an edge on the other, and many of them have a square tang at the back to fit into a handle. Mr. Theobald has pointed out that this description of celt is of a type that is peculiar to Burmah and Pegu, and resembles the form in use in Malayan countries, more especially it is nearly identical with the adze blades used in High Island and others of the Pacific group, but it is quite unlike anything that is found in India, in which country the forms of the stone celts resemble those found in Europe. These peculiar adze blades were undoubtedly constructed by the prehistoric inhabitants of Pegu and Burmah, and if similar forms were hereafter to be discovered in the Andamans it would be regarded as sufficient proof of social contact in prehistoric times, and would serve on the other hand to disconnect them with the inhabitants of India.

It may be observed also, that the iron employed by the Andamanese, and obtained from Europeans or from wrecks, is ground and fitted to their weapons in the same way that a hard stone would be dealt with and that they have no knowledge of metallurgy. This it might be thought on a first impression is sufficient to prove that they are not shipwrecked African negroes, as the art of working iron has been known throughout Africa from time immemorial; but we learn from Mr. St. John that there is no iron in the Andamans, and the art would therefore be forgotten in a few generations, but the remembrance of it would probably have survived in their traditions.

Dr. Mouat says,* that their water vessels are formed of enormous joints of bamboo. It will be seen that the specimen now exhibited, DÂKAR-DA, No. 14 (Pl. XIII) though scooped out of a solid trunk, resembles the shape of a bamboo joint, a form which is no doubt derived from the use of that material in other places where it is available.

No information has reached us as to their mode of boring holes or procuring fire, on both of which points it is desirable we should possess some knowledge.

In the use of nets and basket work, Nos. 17 and 18 (Pl. XIII), these people resemble the Australians, Fuegeans, Tasmanians, New Caledonians, and most people in the lowest stage of culture; this appears to be one of the earliest and most necessary arts of savage life. It would be desirable that we should have more detailed information as to their mode of making and twisting string; their baskets very closely resemble some of those made by the Australians, and figured by Angas.

In the use of pottery, No. 19 (Pl. XIII), they excel the Australians, Tasmanians, Fuegeans, and most of the Pacific Islanders, who have no knowledge of it; standing in this respect on a par with the New Caledonians, Papuans of New Guinea, Fiji Islanders, and negroes of Africa generally. The pottery is hand-made and apparently confined to a deep basin-shaped form, and it has some fine grains of a white material in its composition. As is usually the case with people who live habitually in the open air, their vessels are round bottomed, thus adapting them to be pressed into the soft ground, and, as is commonly the case under like circumstances, they are carried in a casing of basket work. In many countries the ornamentation of the pottery has clearly been derived from an imitation of their basket-work coverings, and I think an examination of some of the fragments exhibited will show that this was the case in the Andamans; some of the ornamentation very closely resembles the basket in which this pot is carried, see No. 19, a specimen found in a kitchen-midden in Port Blair Harbour. See also the fragments of ornamented pottery, represented in (Pl. XVI). More information as to the composition and manufacture of these vessels is required, and any tradition as to the origin of the art.

Do the Andamanese possess any knowledge of the use of the fish-hook? Upon this point we are left in some doubt. Dr. Mouat,* quoting an article in the "Calcutta Monthly Register," for November 1790, says that they are not acquainted with its use; but in another place, when describing the arts of the Andaman Islander, he speaks casually of his hook, his net, and his harpoon as the means employed in fishing. We have no more accurate information upon this point than I am aware of, and there is no hook in the present collection. Most of the lowest savages appear to have some knowledge of this contrivance; the Fuegeans employ a bone hook, although they are said sometimes to fish with a bait without a hook. Mr. Oldfield says, that the Watchandies of Western Australia have no knowledge of a hook for fishing, although they have a word to express such an implement, but that it is used by the natives of Shark's Bay, and the Murchison natives have been taught the use of it by Europeans†; but Angas‡ gives an illustration of a shell hook used by the natives of Port Jackson before European fish-hooks were introduced amongst them; they are also mentioned by Cook.§ Captain Cook believed the natives of Tasmania to

* p. 35.

† *Trans. Ethnological Society, New Series*, vol. iii, p. 274.

‡ "South Australia Illustrated," Plate 47.

§ "Cook's Voyages," vol. i, p. 264.

be ignorant of the use of the hook, but the opinion rests upon negative evidence only.* Hooks are used generally in the Pacific Islands.

The iron knife constructed of shipwrecked materials, called KAWNO-DA, or CHAW-DA, No. 21 (Pl. XIII), resembles the knife used by the Australians so closely that it would be difficult to determine to which country a specimen belonged. Its peculiarity consists in having in place of a handle, a small knob composed of some soft material bound round the base of it to preserve the hand from injury; the blade is single-edged and the back curved. The persistency of the type amongst the Australians is shown by some specimens exhibited, by which it is seen that the same form was used with stone, glass and iron, the iron ones being ground into the same form as their stone ones, and prepared for the hand in the same manner, and this has probably been also the case with the Andamanese implement.



AUSTRALIAN KNIFE OF GLASS.



AUSTRALIAN KNIFE OF IRON

It would be well to ascertain hereafter whether the Andamanese have any use for a boomerang, such as the Australian weapon, or that used and constructed of wood in Eastern Africa, or the rounder and heavier, but otherwise similar weapon, used by the wild tribes of India.

The mode of carrying children astride of the hip appears to resemble the custom of the Nicobar Islanders, and I believe the same method is in vogue in some parts of India, but I am not aware whether the sling, CHÎP-DA, No. 25 (Pl. XIII), is employed elsewhere.

The practice of covering the body with coloured earths mixed with oil resembles that in use by the Australians and Fuegians, and indeed most savage races have some reminiscence of such a practice, but the particular mode of covering the head and parts of the face with white when in mourning, ÔG-DA, No. 54, bears so close a resemblance to the Australian custom, that I have

* "Third Voyage," vol. ii, p. 41, "Pre-historic Times," p. 439.

placed side by side two drawings representing natives in mourning attire, one taken from a picture of an Australian woman in mourning in Angas's work,* and the other enlarged from one of the photographs now sent by Mr. Man, and described by him as the costume of mourning for the dead. To what extent this similarity of custom is to be regarded as evidence of social contact in times gone by may be a matter of opinion, but the resemblance certainly is very close.



AUSTRALIAN WOMAN IN MOURNING.
(*From Angas.*)



ANDAMANES WOMAN IN MOURNING.
(*From a photograph.*)

The flakes, or rather chips of white quartz, TAWLMA-DA, No. 61 (Pl XII), formerly used for shaving the head, and now replaced by flakes of glass obtained from the European settlement, No. 61a, are worthy of notice from their extreme rudeness, the small fragments scarcely presenting any evidence of design, such as bulb of percussion, by which had it not been for Mr. Man's description, we should recognise them as being of human workmanship. Certainly the majority of such chips, if scattered over the surface of our ploughed fields, would escape the attention of an experienced collector of flint implements, yet we see that they serve an important function in the hands of these people. The same applies to the Cyrena shells ÛTA-DA, No. 63 (Pl XII), and the JÏRKA-ÛTA-DA, No. 64, which, though they might not escape the notice of a careful explorer of prehistoric remains, would certainly not be recognised as tools if found in the fields. Yet we see from the account here given of them that they serve the most useful purposes in this capacity without any addition of handle or preparation by grinding, and they are

* "South Australia Illustrated," Plate 51.

used in thatching, arrow making, planing, and ornamentation, as spoons for gravy, and indeed so useful are they for these and other purposes that some are always kept and carried ready for use.

We may learn, I think, an important lesson from this in our prehistoric researches, for it shows what important functions natural forms must have served in the infancy of the arts, and that it is not solely to the more finished flint tools that our attention should be turned, but to the evidence of the use of natural fractures of flints, shells, thorns, and other natural objects which may, and indeed must have preceded the employment of the more highly wrought specimens of tools and weapons. How much then is the prehistoric archaeologist indebted to the descriptive ethnologist who will observe and record such facts for our information.

The boar's tusk, PÎLÎCHA-DA, No. 65 (Pl. XII), is another of these primitive implements which without any preparation or hafting is used by them as a much-valued tool in planing bows, paddles, &c. Such tusks are of constant occurrence amongst prehistoric remains in this and other countries, and have been frequently noticed by archæologists. Amongst the most notable of the discoveries in which they figure conspicuously may be mentioned those found by Dr. Schlieman at Hisarlik,* and now exhibited at South Kensington. The grinding at the point, however, which has sometimes led to the supposition that they were sharpened for use, has, I believe in the majority of cases, been made by the beast itself for purposes very different from that to which they were afterwards employed by man.

The sleeping mat, PÂREPA-DA, No. 22, resembles in a most remarkable manner the sleeping mat of the Kaffirs, one of which from my collection is exhibited for comparison. It was formerly in Mr. J. G. Wood's collection,† and is described by him in his "Natural History of Man." Although the stems in the African specimens are somewhat thicker, they are fastened together in the same manner, neither race having any idea of weaving.

In the use of the torch TÔG-DA, No. 66 (Pl. XII), for fishing, these people resemble the Nicobarians and the Australians.

The model of an Andamanese canoe, RÔKO-DA, No. 69 (Pl. XII), appears to me to throw some light on the question as to whether this or the outrigger canoe was the most primitive form. Dr. Mouat is of opinion that the outrigger must be of recent introduction in the Andamans, because it is not mentioned by

* "Troy and its Remains," by Dr. Henry Schlieman, p. 78-165.

† "Natural History of Man," by the Rev. J. G. Wood, M.A., vol. i, Africa, p. 227.

earlier writers; this, however, is negative evidence only. I have elsewhere stated* my reasons for thinking that the outrigger canoe is of very early origin, and that it is simply a survival of the raft, the hollowed canoe representing one of the beams of the raft dug out, the outrigger another beam reduced to governable dimensions, and the outrigger poles the cross beams by which, in its primitive state, the raft was held together. We now learn from Mr. Man that the canoe without the outrigger, of which No. 69 (Pl. XII) is a model, is only made in the South Andamans where iron adzes are procurable from the European settlement, and that elsewhere in the islands the outrigger is used; this appears to show that the disuse of the outrigger is a modern innovation dependent on the use of materials which the European settlement only is able to supply. It may be observed also from the model, that these vessels, hollowed out of light trees, *sterculiaceæ* are of the clumsiest construction, mere rounded trunks, without any keel, and, as might be expected from their construction, we are told by Mr. St. John and others† that they are constantly upsetting, which shows that the natives have not yet hit upon the expedients necessary to enable the vessel to sail alone without the aid of the outrigger; moreover, the distribution of the outrigger canoe is continuous all over the Pacific, Asiatic Isles, and Nicobars, extending to Ceylon and the east coast of India, the Andaman Islands and Pegu forming the most northern limit of its area of distribution; and it is unlikely therefore it should have reached the northern shores of the Andamans, and not have been introduced into the south, which is the nearest point of contact. Wherever the outrigger canoe is found, there social contact to a greater or less degree must have existed with distant islands where similar canoes are used.

Dr. Mouat says it sometimes takes them a week to fell a tree, and then after first rounding the outsides the interior is excavated until the sides are not thicker than a deal bonnet box.‡ In Blair's time fire was employed for this purpose. The Andaman Islanders used the hollowed trunks of trees charred by fire as ovens for cooking their food,§ and I have elsewhere suggested that it was by this means savages first learnt to excavate their canoes.|| Dr. Mouat says that three sizes of paddle are employed for men, women, and children, but only one is shown in this collection.

* "Early Modes of Navigation," by Col. A. Lane Fox, *Journal Anthropological Institute*, vol. iv, p. 426-431.

† *Trans. Ethnological Society, New Series*, vol. v, p. 49.

‡ Mouat, p. 316.

§ Mouat, p. 308.

|| "Early Modes of Navigation," *Journal Anthropological Institute*, vol. iv, p. 403.

In the practice of preserving the skulls of their relatives, the Andamanese resemble the Australians. In both cases the skull is used for some purpose of utility, the Australians using it as a drinking vessel and the Andamanese, according to Mr. St. John* as a box to contain objects put into it through the spinal aperture. Dr. Mouat† says that this custom is prevalent amongst the Fuegeans, but I am not aware on what authority the statement is made.

A custom which prevails in the ornamentation of their huts is mentioned by Dr. Mouat on the authority of the Brahmin Sepoy. Bundles of fish bones, turtles' heads, and pigs' skulls, striped crosswise with red ochre, are suspended ornamentally from the roofs of their dwellings. In New Guinea Sig. D'Albertis‡ speaks of a similar mode of ornamenting their dwellings by means of a trophy of skulls hung over the entrance; and Dr. Comrie,§ between East Cape and Astralobe Bay in New Guinea also describes the skulls of the pig, dugong, a turtle, hung over the entrances as an ornament and to attest the wealth of the owner by showing the amount of provisions he has got through. A similar mode of ornamenting the dwellings prevails in other parts, but I am unable to call to mind at present where I have seen it described.

It would be of interest to ascertain the reason for the exclusion of pigs' bones from among the list of animals whose bones are employed as necklaces, &c., for ornamental purposes. Does this arise from the recent introduction of the pig, or from any idea of the unclean animal having crept into their superstitions?

In their huts the Andamanese most nearly resemble the Australians and Fuegeans, and they appear to be of the most primitive kind, in some cases mere holes in the sand sufficient for purposes of habitation.

The foregoing are some of the most salient points of resemblance which have struck me in comparing the arts of these islanders with those of people who may be considered to be their congeners in neighbouring or distant lands. Other connections will no doubt be pointed out by anthropologists who have examined the list itself, which is worthy of attentive perusal.

With their nearest neighbours the Nicobarese, those dwelling on the coast at least, Mr. Distant has already pointed out that they present no affinity whatever, either physical or social. The specimens of the implements of the Nicobarese now exhibited show them to be in a very much higher condition of progress,

* *Trans. Ethnological Society*, vol. v, p. 43.

† Mouat, p. 329.

‡ *Journal Anthropological Institute*, vol. vi, p. 215.

§ *Ibid.*, vol. v, p. 107.

and to have made some advance in metallurgy, the knowledge of which has probably been communicated by the Malays; if, in fact, the objects exhibited from the Nicobars are of home manufacture. With the exception of the almost universal harpoon (No. 8, Pl. XV), scarcely any of their implements present any resemblance to those of the Andamanese. Their houses are built on piles like the Malays, they bore the ear like them and fill up the aperture with a piece of stick (No. 19, Pl. XV), their pottery (No. 1, Pl. XV) is of a superior quality to that of the Andamanese, and as Mr. Distant has already told us, it is made in the Chowra Island only; * their fish spears (Nos. 3, 4, and 7, Pl. XV), resemble some of those used by the Malays, but used also in most of the islands except the Andamans, so far as we know, and their ordinary spears (Nos. 2, 9, and 10, Pl. XV), have a general resemblance to Malay spears. The two people, judging by the photographs that are exhibited, also appear to resemble one another. It must be borne in mind, however, that these Nancoury people are not the aborigines of the islands, who are to be found in the interior of Great Nicobar under the name of Shobængs, of whom little or nothing is known, and it is with these probably that connection with the Andamanese may hereafter be traced.

In so far as my examination of this valuable collection enables me to form an opinion, there is nothing in the implements of the Andamanese which would lead us to differ from the conclusions arrived at on grounds of physical constitution or language. With Professor Owen we may say that we cannot with certainty connect them with the aborigines of any continent. With the linguistic researches of Mr. Man and Lieutenant Temple we are in agreement, when we assume that their nearest representatives are the Australians. There is something more than a general resemblance, I think, in some of the tools and customs of these two races, whilst between them and others in a similar stage of culture a general resemblance can be traced, leading to the inference that from whatever region the black races of mankind may originally have diverged, they may have carried with them the rudiments of the simplest arts.

If we were in possession of as much detailed information about the tools and weapons of other savages as Mr. Man has given us of those of the Andamanese, and which being the first-fruits of our Anthropological Notes and Queries, the Institute ought I think to be especially congratulated upon receiving, our means of comparison would be greater. If travellers generally had paid as much attention to these details of their simple

* Mr. Distant on "Our knowledge of the Nicobarians," *Journal of the Anthropological Institute*, vol. vi, p. 213.

arts as they have paid to their monstrous religious beliefs and rites,—beliefs and rites as little understood for the most part by the people who practise them, as those by whom they are recorded,—we should possess more reliable data with which to trace out the early history of mankind.

If, however, the resemblance in the forms of implements to which I have drawn attention is not admitted as evidence of social contact, then with all deference I submit that such evidence is not likely to be found in the study of words. Words are subject to variations arising from defects of hearing, memory, and other causes, from which the arts are exempt. Admitting that the structure of a language will survive after the last vestige of its roots have disappeared, it must yet be affirmed that in a low condition of culture, languages, for the reason above stated, change more rapidly than the arts. As civilization progresses, these two branches of human culture reverse their positions; the arts develop more rapidly whilst language tends to become fixed. The truth of this is exemplified by the collection before us, where it is seen that many of the forms of implements are said to be the same throughout the Andaman tribes, whilst the language has changed so greatly that men of different tribes are unable to converse with one another.

CLASS—DESCRIPTIVE ETHNOLOGY.

Extract of Letter from E. H. MAN, ESQ., to his Father, COL. MAN.

“PORT BLAIR, 28th May, 1877.

“My trip, as my last letter to you led you to expect, took place from the 5th May. I returned on the morning of the 10th. It was a fair-weather trip the whole way, the monsoon being very late this year, commencing on or about the 20th inst. On leaving Ross we passed through Manners Straits (i.e., between Rutland Island and the Cinque Islands), and, passing within a few miles of North Centinel, where I so much wanted to land, we landed at 5 P.M. in Port Campbell, my first visit there. Seeing two canoes full of junglees, I went to them without delay, so that we might have a jaw with them before it got dark. We found that there were nine of them, and they were turtling. One of your old Ross Orphanage boys (Nicholas) was of the party. They had caught one or two turtles. I gave them a lot of necklaces, &c., and as they told me that there were a number more of them in an encampment farther in the harbour, I told them to go back to their friends and bring them during the night to an old camping ground which I noticed, and pointed out, within a mile of the ship. I told them if I saw them there at day-

break I would land and give them a lot of presents and plant some fruit trees. They promised, and did not disappoint me. So the next morning I went on shore and performed my part of the promise. I found a number of women and children as well as men. One of them was recovering from the measles; so I collared him, as I found he had only just joined them, and they may now have escaped the infection, which if he had stayed with them they could not have done. It appeared he got the measles from the 80 who ran away from Brigade Creek. He told me that four or five had died of that lot, but that the rest had recovered. I took on board four other men from this place, three of them as they required feeding up and medical treatment as well, and the fourth because I took a great fancy to him as he was willing to come. I ought to have mentioned that I left Ross with 33 junglees. On leaving Port Campbell we went to Bārākābīl, a village a little south of Flat Island (west of Mid-Andaman) where I landed ten men and women and one child. This is the finest encampment I have ever come across, and I was anxious to revisit the place, as in March last year I had planted a lot of young fruit trees there. I found my old plantain trees had been left undisturbed and doing fairly well, but they are evidently in want of more sun than they get in the small clearing (say 80' x 80') in which they are situated. The pine-apples were all right and beginning to bear, but the cocoa-nuts had all been rooted up either by the junglees themselves or pigs. As I brought only sprouting cocoa-nuts this time I am in hopes that as they contain little worth eating they will be left undisturbed. The papayas were doing well, and I planted others, besides limes, tamarinds, and guavas. I left a great number of presents of all sorts, including rice, tobacco, pipes, matches, beads, looking-glasses, tin pots and pans, cloth and clothes, files, bottles, &c. There was the usual heartrending scene of crying on the meeting the eleven and their old friends. The latter appeared very grateful to me for not having kept their friends for ever and aye, as I had the power of doing on getting them into my clutches. They will, however, find out before long that we consider it is they who are supposed to benefit by a residence at P.B. The fact of the matter is that the benefit we derive is that in case any ship is wrecked on their coast, they are far more likely to treat the unfortunate people on board with humanity from knowing our power to punish and our friendly feeling towards them, and the certainty of a reward for good conduct, than if left in ignorance of our existence and of our power to punish and reward them. There can at the same time be no doubt that they enjoy much better health and are in much better condition as a rule in the jungle than those we have at our homes. Of course there are some as fine specimens among the latter as could be found in the jungles and they get much more intelligent, but certainly less virtuous and truthful from having to mix with the convict-prison officers, &c.

"It is delicious to come across a true jungle, one I mean who has never yet had anything to do with us, and find how ignorant he

seems of the art of lying or prevarication, and generally even after they have picked up the habit, it is practised in such a manner that it is easy to detect them, but sometimes it is only intended as a joke and to show how clever they are.

"What could have led me to make such a digression? After an affecting farewell, especially from one Châna Mébola, a pretty young married woman who came running out to give me one last 'good evening,' we started off in order to return to the ship before dark. There were a lot of junglees making for Bârlākābil as we were leaving, they having received intelligence of our visit while we were there, but we could not stop to see and speak to them. Before leaving I had cut my initials in a tree at the entrance to the encampment. As King the captain of the 'Enterprise' had, by taking a circuitous route in order to avoid possible shoals, taken half a day longer in doing that distance than I had reckoned on, I was obliged to forego a visit to Interview Island and so we kept under way the whole night, and at day-break found ourselves off the northern point of the Andamans and in sight of the southern islands of the Cocos. At 10.30 we entered my favourite harbour Port Cornwallis. There at the very entrance I caught sight of a party of junglees fishing. So I got King to 'ease 'er' off the mouth of the harbour while I proceeded on shore to communicate with the natives. I took the two Sound Islanders and others belonging to Mid-Andaman and a lot of presents and two dogs. These were held up by junglees at the bows with the usual result (not usual however at Port Cornwallis), but now I am hopeful that they are on a fair way of becoming quite friendly towards us. But I must explain what occurred: Two junglees ventured out on seeing the boat approach the shore. They shouted and I made the Sound Islanders listen and reply, their dialects being happily somewhat similar, or at any rate fairly intelligible to each other. I got Chipla to inform the two gentlemen that we intended landing, not where they were (on a reef) but at a sandy beach about a quarter of mile off, and if they wanted presents they had better swim off to us and save themselves the trudge over the rocks. One of them did not hesitate, but pluckily plunged in and soon boarded us. Now this was a great stroke, as he of course knew that by doing this he had placed himself entirely in our hands, and we might have brought him away to P.B. I, however, covered him with presents; and how he stared at the various types of the genus homo with whom he found himself surrounded in the boat! Besides the Hindoostani and Madrasi (old boatmen of mine), there were a Punjaubi, the Lascars, a red-bearded officer of the 'Enterprise,' and myself, and of course also our junglees. Chipla told us that this man (who proved to be an elderly individual) was a (or the) chief of the place, and he apparently was so from the air of superiority he assumed. We took him to the sandy beach, and the other man met us by walking round. I then did this, I gave the old chief into Rêo's charge, with instructions to fetch out those who were hiding in the jungle, and I sent Chipla (the other Sound Islander) with the other man in an opposite direction, as they said

there were some there. Meanwhile I set to work planting cocoa-nuts. Rêo took one of the dogs with him, but did not return with it, so perhaps the young monkey gave it to some junglees he may have met. However, he and the chief returned saying either that there were no junglees in the direction they had gone, or that they funked coming to us. Chiplâ's man after going a long distance with him slipped into the jungle, Chiplâ said in order to bring out some who were close by, but Chiplâ on the former trip played us false by telling them that we were going to make away with them, and it was owing to their making a bolt which led Ahmed to seize hold of one of them and struggle with him in the way I related to you at the time; and so it may be that Chiplâ played us the same trick this time, the only thing against it being that, on the former occasion, he knew nothing about us, having only been with us for one day, whereas he had on this second trip been with us for over five months, had been successfully treated by Reed for a tremendous spleen which he had contracted in his own home, and had been carefully nursed through the measles, &c. However, though I waited for twenty minutes his man did not return, so I gave the old chief some more presents, although he declined to accompany us to the steamship. We then landed at an old place about two miles distant where I had gone on my former trips and left a lot of presents there, and then we went to Chatham Island, where we saw two boys who bolted, and our two Sound Islanders failed in coming up with them. I left presents in a hut at the south-west corner of the island, which is about one and a half mile long and I went to Blair's old settlement (north end of Chatham Island) and did the same there. At both places fruit trees were planted. The following morning we started off at daybreak. The party at the entrance of the harbour mustered in strong force, and, judging by their gestures, wished us to land there, but the ship was then going full speed and stopping was out of the question. I fully believe that if we had stopped and landed they would all have remained there and given us a friendly reception. On these trips I take care not to fire off a gun, even though a tempting shot at a simple curlew or pigeon may present itself, as of course the junglees within sound of the shot would at once conclude that some poor friend of theirs was being disposed of, and I got King and his officers to abstain in like manner. We arrived at Sound Point about nine, and we proceeded at once to Mêôpông, the village at which Tôngla and Chânga live. We found to our disappointment that there were wreaths hung up at the entrance to the encampment. These festoons indicate that a death has recently taken place at the encampment in question. Our two Sound Islanders of course looked very glum on seeing this, as they must have wondered which of their friends had died during their absence. They said they would beat up the neighbouring encampments, and bring some friends to see us. Meanwhile we filled the huts with presents amongst which were twelve fowls and a pair of dogs. We planted a lot of cocoa-nuts and other fruit seedlings in the small clearing and waited half an hour, but as the men did not return,

evidently finding the nearer encampments also deserted, we were obliged to leave, having to anchor off Middle Button at five. We consequently failed in seeing our old friends Tôngla and Chânga, and in fact anyone. However, we had anchored at a corner of the Sound and only landed at one place. To give all the natives of the place a chance of knowing of one's presence one must remain at anchor for at least a couple of days, and in some conspicuous part of the harbour. When they come to know us better we shall no doubt find it best to fire off one or two rounds from the ships, or 16-pounders, to tell of our arrival in their midst. There being time for landing at Middle Button, I went ashore with King and Fern, and planted some cocoa-nuts. The island is a perfect gem of a place, and as King remarked, capitally suited for a picnic. There was a nice clearing near a sandy beach, on which we found some temporary Andaman huts, and close by some papaya trees, the male kind only having been stupidly planted, which showed that some former trip taken (probably Hamfray) had tried to do something for the junglees. It appears that the captain of some vessel was buried there some ten years ago, but we could not see any signs of a grave, but the time and tide did not allow of our examining the whole island.

"The next morning we steamed to Strait Island, and from there I sailed to the Andamanese "Garden of Eden" (Wotâ emida).^{*} It was a thundering long pull, and if I had not taken my two convict pullers, goodness knows how long the lascars would have dawdled over the distance. The wind was very light, and came on every now and then so provokingly that it afforded us little or no assistance, as we had to drop pulling when trying our luck with the sail. When we got to the famous rock where their Adam and Eve lived what do you think I found? I wish I could describe it geologically. At any rate I made out that it was a large piece of sandstone, perhaps 30" in diameter, situated on the shore of a large shallow sheet of water which is enclosed almost entirely by the closely adjoining island and the mainland (on which the stone itself is lying), and the wonderful inscription consisted of nothing more or less than deep incisions caused apparently by the action of the sea, but as the water did not appear to be more than 6 feet deep for a considerable distance from the shore, and the bay itself was evidently too sheltered for the sea ever to dash on the shore with any degree of force, I cannot be sure that this can account for the appearance and condition of the rock. This is also apparently the reason why the junglees attribute such deep incisions to their Adams penknife. It may be that in former days this rock was not so high out of the water as it now is, and yet some say these, like other coral islands, are subsiding.

In one place a small archway had been formed at one end of, and through, the rock, just like such as one finds occasionally at home on some weather-beaten coast. I suppose they regard that as

^{*} See *Journal of the Anthropological Institute*, vol. vii, p. 106.

the full-stop of the inscription. I must confess I was disappointed, but still it was something to have seen the place which they (South and Mid Andamans) regard as the scene of the Creation, and consequently as a sort of sacred spot. Near by, were other stones similarly marked, which are in like manner believed to have been so marked by Tawmoda.

"We came across no less than five canoes full of junglees who greeted us, and who were rewarded with presents, which these people value more than anything. We left a man and his wife who had been with me for a year, and brought away three men and a boy, after landing at their village and planting a number of fruit seedlings. We then proceeded to the Archipelago where I have never before been; unfortunately the ship could not enter the passage in which the junglees said we were sure to find a large number of 'Balawas,' and so we proceeded further south to a point which King said he had visited a few years ago. I had unluckily got touched up by the sun in my long morning's pull to Wôtâemida, and so was quite unfit for further exposure to heat. There were no junglees where they landed, and so the landing party amused itself in shelling and shooting duck. The next morning, however, we saw the smoke of an encampment, within 1,000 yards of where our party had landed, and if we had not arranged to return to P.B. before 11 A.M. we should have landed and paid the people a visit. They had apparently turned up during the night after 'shikaring' all day, and had up to that been ignorant of our presence, their encampment being some 50 yards inside the edge of the jungle.

"The coloured cloths hung up in conspicuous places about the shore, would soon, however acquaint them with the fact of our having been recently there, and these cloths were of course placed over small bundles of presents, which would otherwise perhaps have remained unnoticed until they had been completely destroyed or damaged by the approaching rains.

"I believe nothing I have done has so impressed these people of South and Mid Andamans as bringing down the four Sound Islanders, Tongla, Chânga, Chiplâ, and Rêo. They were fully of opinion that the people of North Andamans and Little Andamans were cannibals. They of course now know that the former differ but slightly from them in *anything except their language*;^{*} and they are consequently prepared to find themselves in like manner agreeably surprised regarding the latter when the good day comes for making up to them. The more I see of these people the more convinced I am that the plan I have adopted from the first is the correct one, viz., of not courting a meeting all at once, but to commence by leaving presents, and to show no anxiety to get them to 'come here,' which they naturally interpret into a desire to carry them away as slaves, or may be as food for a feast. And it would never do to take away less than two (and those only of their own free will, and for a short period which

* The italics are mine. A. LANE FOX.

should be explained to them, by pointing to the moon and showing two or three fingers as the case may be), lest one should pine away or die from any other cause, and none remain to explain this to his friends."

Extract from a Letter from Mr. E. H. MAN, to his Father, COL. MAN, dated 26th June, 1877, relating the Epidemic of Measles in the Andamans.

With regard to the measles epidemic, the number of deaths at Viper out of nearly 200 junglees, for I fetched as many as I could here to be treated, was 53, and, as far as I can ascertain, there have been 40 or 50 deaths in the jungle out of perhaps a similar number (200) of persons attacked, but I am still making inquiries on the subject, and hope to learn how many were really attacked in that jungle, and how many died. It is no easy matter to arrive at even approximately correct conclusions on such points, as the people are so scattered and few in number, and can give no assistance, as they cannot count, or state positively when or how many died, and they of course only mention those whose recent death they recollect, but the general impression is that this unfortunate epidemic has carried off about 100 out of, say 500 attacked, and it is more than probable that the infection will go on spreading till it reaches the northern tribes. The only people who have escaped from being infected among our neighbours are the Port Mouat party, numbering some 50 or 80, and now there is scarcely any need for us to continue to look after them, as all their surviving friends of South Andaman have now recovered, and can no longer convey the infection to them.

List of ANDAMANESE AND NICOBARESE IMPLEMENTS, ORNAMENTS, &c., presented to MAJOR-GENERAL LANE FOX by E. H. MAN, Esq., and thus described by Mr. MAN, 18th September, 1877.

ANDAMANESE OBJECTS.

- 1 Bow as used by all the tribes except those of North and Little Andaman (4 specimens sent), "Kârama-da." Pl. XIV.
- 2 Bow as made for the use of their children (2 specimens sent). Pl. XIV.
- 3 Bow as used by the tribe inhabiting Little Andaman and adjacent islets and by the offshoots of the same tribe occupying parts of South Andaman, with arrow. Pl. XIV.
- 4 Bow as used by the North Andaman tribes (a) (b) (c). Pl. XIV.
- 5 Arrow for killing pigs (Ela-da) as used by all the tribes

except that of Little Andaman. (For specimen of Little Andaman pig-arrow, *vide* No. 3, to which one is attached.) Pl. XIV.

5a Arrow of different pattern, called Elâka lûpa-da.

6 Arrow used for shooting fish and sometimes pigs, "Tawl-bôd-da." Pl. XIV.

7 Arrows used for shooting fish when Tawl-bôd's are not available. It is also sometimes used as a weapon in their quarrels. (Tirléd-da.) Pl. XIV.

8 This is merely the "Tirléd" arrow with the point unsharpened. It is sometimes used thus when practising at an object, but more frequently for conversion into a "Tirléd" Rata-da. Pl. XIV.

9 This is not used as an arrow, but is only used as an ornament; but few are met with. Châm-da. Pl. XIV.

10 A fish-arrow made by a native of North Andaman (*v.* ticket No. 6).

11 A fish-arrow made by a native of North Andaman (*v.* ticket No. 7).

12 Spear for killing pigs used by all the tribes except North and Little Andaman (Êrdûtnga-da). Pl. XIV.

13 Adze (Wôlô-da). This is the most common and useful implement used by the Andamanese. With it they make their boats, bows, pails, dancing-boards, &c. Pl. XIII.

14 Pail (Dâkar-da) scooped out of one piece of wood, as used by all the tribes except that of Little Andaman. Pl. XIII.

14a Pail as used by the Little Andaman tribe. One child's specimen included.

15 Sounding-board (Pûkûta yemnga-da) used in keeping time for dancers. The pointed end is stuck into the ground and a stone placed underneath. Pl. XIII.

(N.B. Larger specimens are generally used, but a small one is sent to suit the size of the packing case.)

16 Tray (Pûkûta yât maknga-da), used as an eating-dish, &c. Pl. XIII.

17 Basket (Jôb-da) as used by all the tribes for carrying food and sundries. The people of Little Andaman make a much larger description. (A specimen of a small North Andaman one is also enclosed). Pl. XIII.

18 Kûd-da, is the name given to the hand fishing-net. It is used by the women who catch small fish in streams and among rocks on shore by its means. Pl. XIII.

19 Cooking-pot (with basket cover in which it is carried), called Bûj-da. Similar descriptions are used by all the tribes. Pl. XIII.

19a A specimen found in a Little Andaman encampment is

enclosed. 19b Also some broken pieces found in a "kitchen midden" in Port Blair Harbour. See Pl. XVI.

20 Nautilus shells (Ôdo-da), used as drinking vessels. Pl. XIII.

21 Káwno-da (also called Chaw-da), knife (with sometimes a skewer attached), used in cutting up food. Pl. XIII.

22 Sleeping mat, called Pârêpa-da.

23 Fan-like screen (Kâpa-jât-nga-da) made by sewing together the large leaves of the Kâpa. It is used not only as a sort of umbrella to protect them from rain and sun (when oppressively hot) but for wrapping up bundles of food, the clays, and red oxide of iron (used for painting the person), personal ornaments, &c., and they often use it in place of dry leaves for sleeping on in the absence of a Pârêpa (v. 22 above).

24 The turtle-spearing apparatus. The iron spike is called Kôwaia-da, the line Bêtma-da, and the long bamboo handle (often 18 feet or more long) Tagw-da. When in use the Kôwaia is fixed in the tawg and the bêtma is held in the hand. When the turtle is struck the tawg gets disconnected and floats, and is recovered after the turtle has been captured. Pl. XIII.

25 Sling or belt (Chip-da) worn like a sash by men and women in carrying children. Pl. XIII.

The plain ones are called

.. Chip-lûpa-da.

The ones ornamented with netting

.. Chip-râb-da.

The ones ornamented with shells

.. Chip-yâmnga-da.

26 Pinna shells (Chîdi-da) used as eating-plates and for holding clay (v. No. 55) for ornamenting the person. Pl. XIII.

27 Waistbelt provided with a tail of leaves (Bôd-da) made from the leaves of the young Screw-pine (*Pandanus*). This description is worn by women and girls. They are invariably worn, as it would be considered indecent to appear without one. 3 plain and 2 ornamental ones are enclosed, also 2 North Andaman specimens. Pl. XIII.

28 Waistbelt, as worn by men and boys (also called Bôd-da). 4 specimens are enclosed.

29 Waistbelt (Rô-gûn-da) made from the leaves of the young Screw-pine (*Pandanus*). It is worn by all adult women and no others. 5 specimens are enclosed; also one from North Andaman. Pl. XII.

30 Garter (Tâchawnga-da) worn by men and boys, made from the leaves of the young Screw-pine (*Pandanus*).

31 Bracelet (Tawgo-chawnga-da) worn by men and boys, made from the leaves of the young Screw-pine.

32 Chaplet (Iji-gônga-da) worn by both sexes.

33 Nets (Châpanga-da) in which odds-and-ends are kept. Pl. XII.

34 (Râb-da) worn by both sexes as chaplets, necklaces, armlets, &c., both as an ornament and in sickness. 1 North Andaman specimen enclosed. PL XII.

35 Ornamental waistbelt (Garen-pêta-da), worn by both men and women occasionally. PL XII.

36 Ornamental shavings (Garen-len-pid-da) so called because (alive or dead) children's hair is interweaved in it, worn by both sexes.

37 Long shavings of a soft wood called Ūj-da, made by means of the sharp edge of the Cyrena shell. These shavings are held by members of both sexes in their hands when dancing, and are also sometimes stuck in their waistbelts and chaplets as ornaments on those occasions. (7 bundles.) PL. XII.

38 Yâdi-ta-da {necklace and
chaplet} of turtle bones. PL XII.

39 Baian-tâ-da " wild cat.

40 Dûhû-ta-da " iguana. PL XII.

41 Pêtâ-da " cane, wood &c.

42 Ina-awla-tâ-da " fresh-watershells. PL XII.

43 Bêwa-tâ-da " red coral.

44 Râta-awla-tâ-da " sea-water shells.

45 Rêkêto-tâ-da {necklace, chap-
let, waistbelt and
bracelets.} Hemicardium. } PL XII.
Unedo shells. }

The above are worn by both sexes round head or neck as ornaments only, and not like the Châuga-tâ (v. ticket 46), in order to cure pain, &c. (v. also No. 73).

N.B. (Pigs' bones are never used for such a purpose.)

46 Châuga-tâ-da. Necklaces, chaplet, waistbelt and bracelets of bones of deceased friends or relatives worn when sick round parts in pain. PL XII.

47 Resin (Rim-da) obtained from a large jungle-tree of that name. For description of use, v. ticket No. 50. (In glass jar.)

48 Wax of the white honeycomb (Âja-pid-da). Besides being employed in the way described in ticket No. 50, it is used in the manufacture of the "Châpanga" (v. No. 33), and the "Kud." (In glass jar.)

49 Ūpla-da. This is some of the Koi-ôb-chûlnga-da (v. ticket No. 51) after it has been baked in the fire. For a description of its use v. ticket No. 50. Besides being employed in the manner there described it is principally used in the manufacture of Koi-ôb-da (v. ticket No. 52). (In glass jar.)

50 Kângatâ-bûj-da is a hard reddish wax composed of the substances noted below.* When required for use, the pot in

* 1 Rim-da, v. ticket No. 47 .. } If of these Ūpla-da is not
* 2 Âja-pid-da, v. ticket No. 48 .. } ready to hand, "Koi-ob"
* 3 Ūpla-da, v. ticket No. 49 .. } (v. No. 52) is used instead.

which it is kept is placed on a fire. As soon as the wax is melted it is applied as may be required. It is used on the string fastenings of fish and pig arrows (*v.* tickets 5 and 6), on the Kôwaia (*v.* No. 24); on the Dâkar, both inside and out (*v.* No. 14); on the* Pûkûta-yât-maknga (*v.* No. 16); on the Êr-dûnga (*v.* No. 12), and the* Ôda-da (*v.* No. 20). Pl. XII.

It is applied only by way of ornament to the outside of the "Dâkar," and to those marked with * in the above list (in native pot).

51 Koi-ôb-chûnga-da. This is obtained from mineral springs (red oxide of iron), which are fairly plentiful in these jungles. This specimen has been dried in the sun. When baked on the fire it is called "Upla" (*v.* No. 49). It is applied in its liquid form, as found, to sores on the person, and when suffering from fever, and is drunk as a cure for coughs, fevers, &c. It is often kept dried for convenience, and then, when required for use medically, water is added, but a fresh supply is preferred to this. (In glass jar.)

52 Koi-ôb-da. This is made by mixing "Upla" (*v.* No. 49) with some greasy substance such as the fat of the pig, turtle, iguana, dugong, or the oil of an almond called "Êmej-da." This red preparation is applied to the person either ornamentally or otherwise. It is believed to be efficacious in sickness. The nostrils and centre of the upper lip are occasionally painted with it, as the smell of the fat is agreeable to them. From the mode in which it is applied it can be readily determined whether the wearer is sick or rejoicing. Before a corpse is removed for burial it is smeared over the face and neck with this paint as a mark of respect, and in order to please the departed spirit. (In glass jar.)

53 Chûnga-da. This blue-black clay is found in small springs in the jungle. In its liquid form it is drunk as a cure for coughs, fever, and aches in the body, head, limbs, and it is applied to sores or parts in pain. It is sometimes kept dried for convenience (*v.* also ticket No. 51). (In glass jar.)

54 Ôg-da. Lumps of this clay are found somewhat plentifully in the jungle. It is used, mixed with water, for smearing over the body when hot. Lumps of it are placed on the head and forehead as a symbol of mourning, and kept there often for some months. It is also sometimes used ornamentally on the person by smearing rough patterns with it by means of the finger tips. (In glass jar.)

55 Tâla-ôg-da. This is not so plentiful as the "Ôg." When required for use it is, like the Ôg, powdered and mixed

* See p. 460.

with water. It is applied ornamentally except when mourning. The painting is done by the women who spare no pains in executing, by means of their finger nails, neat designs on the persons of their friends and relatives. It is also sometimes applied ornamentally to their bows, baby-slings (*v. No. 25*), baskets, trays, sounding-boards, pails, &c. The women when enceinte occasionally eat small quantities of this clay. (In glass jar.)

56 Tâlag-da. Sharpening stone. With this they sharpen all their iron implements. Pl. XII.

57 Râ-da. Bark of a creeper. This is not very plentiful. It is used in making an ornamental cord (*v. specimen sent*) for wearing round the waist. It is also sometimes used interwaved with the fibre of the "Âlaba" (*v. No. 58*), for the same purpose. It is also occasionally interwaved with the fibre of the "Yôlba" (*v. No. 59*), in order to make ornamental fastenings for arrows, necklaces, Kôwaia (*v. 24*), &c.

58 Âlaba-da. This is obtained from the bark of a tree of that name. It is used in making rope (Bêtma, *v. No. 24*); turtle-net (*v. No. 60*); necklaces, anchor-rope, bundle-fastenings, &c. It is also used in carrying the "Jôb" (*No. 17*), which is suspended from the head by the women, and from the shoulders by the men. From the bark the "Chîp" (*No. 25*) is made.

59 Yôlba-da. A creeper. This is the most valued and valuable fibre in these jungles. It is used in the manufacture of their bow-strings, arrow-fastenings, the "Râb" (*v. ticket No. 34*), "Châpanga" (*v. No. 33*), the fastenings of their necklaces and other personal ornaments, also on the "Kôwaia" (*v. No. 24*), and "Kawno" (*v. No. 21*). [A specimen is attached of the string made by them from this fibre.]

60 Yawto-têpinga-dâ. This is a specimen piece of a turtle-net made from the "Âlaba" fibre (*v. No. 58*). [A whole net would occupy considerable space, so a specimen is sent.] Pl. XII.

61 Tawlma-da. These flints (white quartz flakes) were in former days valued by them as they had no other material with which to tattoo or shave themselves. Nowadays they always perform these operations with glass, which they of course obtain from us without any difficulty. 61a flakes of glass as made and used by them for the above purposes. (In two glass jars.) Pl. XII.

62 Pilita-da. (A creeper.) This is found in greater quantity than the "Yôlba" (*v. No. 59*). It is not sufficiently strong to serve for arrow-fastenings, &c., though, on an emergency, it is occasionally used for such purposes. It is principally used in manufacture of the "Kûd" (*v. No. 18*), "Pârêpa" (*v. 22*), &c. [A specimen of the string made by them from this fibre is

enclosed, and the bundle itself is fastened with some of this string.]

63 Ūta-da. (*Cyrena* shell.) Of this and the "Jirka-ŭta" (v. No. 64) they make great use. They prepare the fibres for use by their means and use them as knives for cutting thatching leaves; the "Ūj" (v. No. 37) is made with them. Arrows are dressed and prepared with these alone. The ornamental incisions on the bow, paddle, &c., are executed with them and they are employed for planing purposes, also in sharpening the "Pilicha" (v. No. 65). They are also used as spoons in eating the gravy of pork, turtle, &c. So useful are they, indeed, for these and other purposes that some are always kept and carried ready for use. (In glass jars.) Pl. XII.

64 Jirka-ŭta-da. (Another kind of *Cyrena* shell.) For mode of use, *vide* No. 63. (In glass jar.)

65 Pilicha-da. The tusk of the boar. These are used for planing their bows and paddles, and are much valued by them, as they answer this purpose (in *their* hands) admirably. Pl. XII.

66 Tôg-da. This is the torch used by them when dancing, fishing, or travelling at night. The leaf used is the same as that of which the "Kâpa-jâtnga" (v. No. 23) is constructed. The resin is that which they obtain from a large tree called "Mai-i-da." [Their best canoes are often made from "Mai-i" trunks.] Pl. XII.

67 Lâpi-da, used as torches. These pieces of wood are taken from the heart of rotten logs of the Gurjon tree (*Dipterocarpus levis*), called by the Andamanese "Arain-da." As these do not burn so readily as the "Tôg" (v. No. 66) they are rarely used outside their huts.

68 Tôbûl-pîd-da (also called lârê-da). This is the wax obtained from small black honeycombs, which are constructed by a small description of bee in the hollows of trees. The honey is eaten, but is not so much relished as that of the white honeycomb (v. No. 48). This wax is used for applying to bowstrings and in the manufacture of the "Kûd" (v. No. 18), and to "Yôlba" strings, when employed in the manufacture of arrows, &c., and it is used for caulking leaks in their canoes and pails. (In glass jar.)

69 Rôko-da. Model of Andamanese canoe, often large enough to hold 30 persons. These are only made by the natives of South Andaman and the adjoining tribes to the north and east. The more distant tribes, from the difficulty they experience in obtaining iron, have to content themselves with making small outrigger canoes which are rarely able to carry more than four persons. (1, and 3 paddles). Pl. XII.

70 Wâligma-da paddle. Pl. XIV.

71 *Âra-da*, made by splitting the young leaves of the cane, and used for hanging in festoons round the spot where some one has just been buried (or "*machân'd*") in order to warm off any one who may inadvertently approach the spot which is supposed to be haunted by the spirit of the deceased. After some months, on the return of the party to the spot, the remains of these leaves are burnt. [This specimen is tied round with string for convenience of packing.]

72 *Taili-bana-da*. Stone hammer, used principally in beating out iron for arrow-heads, &c. Pl. XII.

73 *Ngâtia-tâ-da*. Necklace and chaplet made from the fruit of one of the various descriptions of the mangrove tree. Pl. XII.

74 *Ôbûnga-da*. This name is applied to the leaf which serves as a small apron to the women to hide their nakedness. They generally use these leaves (viz., those of the *Mimusops Indica*), which they suspend about three or four thick from the front of their "*Bôd*" (v. ticket 27). (1 packet.)

75 Specimen of Andamanese hair, cut from the heads of some men. It is rare to see them with longer hair than this. The women always keep their heads closely shaven. (1 packet.)

76 Specimen of arrows used in former times when iron was difficult to obtain. The pointed (fish bone) kind inflicts a wound which, it seems, generally, if not always, produces a bad ulcer, necessitating amputation. This may possibly account for the erroneous belief which was entertained by some in former times that these people applied poison to their arrow-heads. [These arrow-heads being very brittle had generally to be renewed after each time of being used]. Pl. XII.

77 *Pidga-da*. The cane which is used in making baskets (v. ticket No. 17) and in repairing cracks in their canoes by stitching over the crack, and covering the seams with "*Tôbûl-pid*" (v. No. 68). It is also used in the manufacture of the "*Tawg*" (v. No. 24) and "*Wôlo*" (v. No. 13), and in carrying the "*Dâkar*" (v. No. 14) suspended from the head or shoulders.

78 *Ridi-da*. The reed used in the manufacture of some of their arrows (v. tickets 6, 7, and 8).

79 *Jini-da* (*Epicarporus orientalis*). When engaged in gathering honey they smear themselves with the sap, which is obtained by chewing. A fine spray is also squirted from the mouth towards the bees, who are driven off by the smell, which is particularly obnoxious to them, and they do not venture to attack those whose persons are smeared with the sap. On the occasion of a honey feast-day, the fibres of this plant are tied round their limbs. The juice is sometimes swallowed as a cure for coughs. (1 bundle.)

80 Pail-da (*Mytilus smaragdinus*). This is one of the shell-fish which they ordinarily eat. (3 in glass jar.)

81 Kârada-da (arca). This is one of the shell-fish which they ordinarily eat. (4 in glass jar.)

82 Ū-da (cyrena). This is one of the shell-fish which they ordinarily eat. The larger is called "Pail-ū-da" (v. also ticket 63). (4 in glass jar.)

83 Yôlba-da. The Creeper. (v. ticket No. 59). (4 in bundle.)

84 Pilîta-da. The Creeper (v. ticket No. 62.) (4 in bundle.)

85 Âlaba-da. A portion of the tree from which the bark is stripped (v. No. 58).

86 Bawro-wa-da. Bunches of these leaves are held and swung violently up and down while dancing by young men and women, when they commence to break their fast of turtle, pig, &c. on reaching puberty. A feast and dance take place on such occasions, when often large gatherings occur. (1 bundle.)

87 Reglâkâ-châl-da. Bunches of these leaves are held and swung violently up and down while dancing by young men and women, when they commence to break their fast of turtle, pig, &c. on reaching puberty. A feast and dance take place on such occasions, when often large gatherings occur. (1 bundle.)

88 Gûgma-da. The leaves of this plant are deemed very efficacious in cases of fever. They are rubbed on the person of the sufferer, who at the same time lies on a quantity of them, and sniffs pieces of the leaves. (1 bundle.)

89 Bêrêbig-da (1 bundle). } These are used like the "Gûgma"

90 Chêtra-da (1 bundle). } (v. No. 88), but not to the same

91 Chawra-da (1 bundle). } extent.

[There are a few more varieties of leaves which are less commonly used by them in the same way and for the same purpose].

STRINGING THE BOWS.

In order to string the *common bow* (v. ticket No. 1), first twist the string till it becomes stiff, then, placing the point of the concave end of the bow on the ground, *slowly* bend the bow by means of the knee, while the other end of the bow is held in the left hand. When sufficiently bent, slip the noose of the twisted string over the notch. During this operation the bow should not be held too erect. The convex end, held in the left hand, should be about $3\frac{1}{2}$ feet above the ground. In firing with this bow the concave end is uppermost; the string after the discharge of the arrow strikes the lower or convex part, and thus saves the left hand from being injured.

The *Little Andamanese bow* (v. No. 3) is apparently strung and used like any ordinary bow. As it requires much strength

to fire any distance with these bows, it is possible that for long shots the people make use of the leg. The natives of the other islands never make or use such bows.

The North Andaman bow (v. No. 4.) This is strung by first bending the bow the *reverse* way. When strung the string is *slowly* brought round to the front side, when it is adjusted at the two ends, so as to place it exactly in the centre line of the bow. To unstring it the operation is reversed. When not in use all Andamanese bows are kept unstrung and waxed, otherwise they are very apt to snap.

NICOBAR UTENSILS, IMPLEMENTS, &c.

1 These are cooking-pots as made by the natives of the Island of Chowra (or Tschaura), who barter them for boats, &c., at the other islands. Each pot has a distinctive name indicating its size and capacity. In the Sections, Pl. XV, they are represented upside down.

2 (Shanein) Monghêâng, spear for killing pigs. Pl. XV.

3 Miân Kentem, fish spear having five prongs. Pl. XV.

4 Miân fôân " " four " Pl. XV.

5 Miân Momaingya " " two "

6 Miân lôê " " three "

7 Hôppák, spear having a number of wooden prongs for small fish. (A small description of this spear is termed "shinpûng.") 2 large, and 2 small. Pl. XV.

8 Hinwenh. Fish harpoon used for catching large fish. The turtle harpoon (called Kansheú ka), very much resembles the "Hinwenh," but it has a longer line. [I have no specimen in my possession, so cannot send one.] Pl. XV.

9 Hop-lôäp, pig spear. Pl. XV.

10 Yenawma. This is used for killing pigs when a monghêâng (v. No. 2 above) is not available. Formerly it was used for killing their bad (or unsuccessful) "munloënnas," or priests and doctors who are supposed to possess supernatural powers in being able to exorcise evil spirits, cure the sick, &c. Pl. XV.

11 Hô-m-yâh-la. This is regarded as a symbol or badge of honour, and is found only in the possession of their head chiefs. This is probably the only specimen, or one of very few, that has ever been brought away from these islands. Pl. XV.

12 Hisho-ya. Blackened cocoa-nut shells, used for holding their drinking and cooking water. They are kept suspended in their huts. The black polish is produced by smoking, rubbing, and applying pig's fat. Pl. XV.

13 Kanshait. Used as a scraper in preparing the kernel of the cocoa-nut and *Cycas Rumphii* for use.

14 Hanâ-lâh (also called fanâ-lâh). This is used as a brush for cleaning the feet on entering a hut, at the doorway of which it is placed. It is one of the drupes of the Pandanus Mellori fruit after the pulp has been removed. Pl. XV.

15 Hang-ai (Cyrena), used by the Nicobarese for obtaining the pulp from the Pandanus Mellori fruit by scraping. (In glass jar.)

16 Kanchû-at (*Capsa rugosa*), used for scraping the kernel of the cocoa-nut into fine thin pieces for their old people.

17 Pô-wha. Paddle. The ornamental one is called Pô-wha enkoïn (male paddle), and the other Pô-wha enkâna (female paddle). Pl. XV.

18 Tai-yâk, being a half cocoa-nut shell, used as a cup.

19 Ichê. Worn in the holes which they bore in the lobes of their ears. Pl. XV.

19a Lanôch-hiya. Betel-nut crusher.

19b Anhâ (also ôk), used for scratching the person in order to relieve itch. Pl. XV.

19c Henhel. Flute. Pl. XV.

Bows and arrows are not used by the Nicobarese.

E. H. MAN.

PORT BLAIR,
September, 1877.

DISCUSSION.

Mr. W. L. DISTANT remarked that he was enabled to add little to the very full information collected by Mr. Man. Major-General Lane Fox had alluded to the Australian affinities in the objects from the Andamans, and had referred to the probable origin of the canoe being originally due to fire, as stated before in his paper on "Early Modes of Navigation."* A good instance of how this might occur is recorded by Labillardière at Port Dentrecaesteaux in Tasmania ("Voyage in Search of La Pérouse," vol. i). "Most of the large trees near the edges of the sea have been hollowed near their roots by means of fire. The cavities are generally directed towards the north-east, so as to serve as places of shelter against the south-west winds, which appear to be the most predominant and violent in these parts." Labillardière remarks that it cannot be doubted that these cavities are the work of men; for had they been produced by any accidental cause, such as the underwood taking fire, the flames must have encompassed the whole circumference of the tree; he also mentions how frequently the largest trees were thrown down by the wind.

* *Journal of the Anthropological Institute*, vol. iv, p. 403.

As regards the iron object from the Nicobars, which is described as an emblem of authority possessed only by the chiefs, Mr. Distant did not believe it to have been fabricated by the Nicobarese. In the *Journ. Ind. Arch.* (vol. iii) a writer records that whilst lying off the Island of Teressa, a chief sent his stick on board as a sign that he was coming. In the same volume, however, the Rev. J. M. Chopard, who spent some two years on the islands, particularly states that the only iron weapons the natives used were those they received from foreigners in barter. It was probable that this iron object had been acquired in the same way, and from its ornamental character used in preference to the original stick. When at Car Nicobar he did not remember seeing anything of the kind, though at the same time he was unable to state that such did not exist.

The great ethnological question at these islands is, What are the natives of the interior of Great Nicobar? He had previously expressed his opinion as to their being allied to the Andamanese and the Semangs of the Malay Peninsula, and had referred to M. De Roepstorff's belief that they were "Mongolian." That gentlemen had since (*Proc. A.S.B.*, 1876) described a visit he paid to the Great Island, when he was enabled to have an interview with one of these people, and he again pronounces the race to be "Mongolian."

PROFESSOR FLOWER, F.R.S., said in reference to the remarks of the author of the paper upon the hair of the Andaman Islanders, that he did not think it at all probable that it would be found to grow from the scalp in separate tufts with bare intervals, an arrangement which, although contrary to the statements even of the most recently published work on Anthropology, he ventured to believe did not exist in any human race. It had been disproved by several observers quoted in the paper just heard, in the case of the Papuans, as he had himself had several opportunities of disproving it in the case of Bushmen. The appearance of the scalp of these people until shaved is certainly very deceptive, the spirally twisted hair knotting itself together in distinct tufts, leaving intervals apparently bare, but not really more so than the partings which we can make at will on our own heads, and the same kind of observation which describes the Papuans or Bushmen as having bare spaces between distinct tufts of hair, would represent many of those now present as having the scalp evenly covered with hair, with the exception of a median or lateral naked line, as the case might be.

Considering the great interest which attaches to the physical character of the Andaman Islanders, he regretted that Mr. Man had not been able to supply materials for its study in a collection of skeletons as rich and valuable as that which he had sent of their arms and utensils, to the able description of which by General Lane Fox we had all listened with so much pleasure that evening.

MR. BERTRAM F. HARTSHORNE adverted to some points of similarity between the Andamanese and the Weddas of Ceylon. The use of bows and arrows is common to both; but the bows exhibited were in shape unlike those which are found among the Weddas; the arrows also were much longer and not feathered like those of the

Weddas. He observed that in a communication which he had received from a gentleman who had spent some time in the Andaman islands, it was stated that like the Weddas, the Andamanese were extremely good marksmen, and they would hit a fish under water; he further noticed that, as he had pointed out in the case of the Weddas, the long-continued use of the bow had resulted in an exceptional development of strength in the left arm. One of the Andamanese natives was stated to have been able to count up to eighteen, whereas no Wedda had the slightest idea of numbers, or even of the difference between one and two, and neither race seemed to have any sort of religious belief which could be properly so called.

JANUARY 22ND, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same:—

FOR THE LIBRARY.

- From the EDITOR.—*Revue Internationale des Sciences*, Nos. 1—3.
- From the EDITOR.—*Revue Scientifique*, Nos. 28 and 29.
- From the BERLIN ANTHROPOLOGICAL SOCIETY.—*Zeitschrift für Ethnologie*, Nos. 1 and 5, 1877.
- From the EDITOR.—*Matériaux pour l'Histoire de l'Homme*, Oct. 1877.
- From the AUTHOR.—*De l'Anthropométrie Médicale; De la Chevelure comme caractéristique des Races humains; Extract du dictionnaire encyclopédique des Sciences Médicales.* By Dr. E. Dally.
- From the SOCIETY.—*The Journal of the Asiatic Society of Great Britain and Ireland.* Vol. X, Part I.
- From the SOCIETY.—*Transactions of the Asiatic Society of Japan*, Vol. V, Parts I and II.
- From the LIBRARY.—*25th Annual Report of the Manchester Public Free Library.* 1876–77.
- From the SOCIETY.—*Proceedings of the Royal Society.* Vol. XXVI, No. 184.
- From the CLUB.—*7th Annual Report of the Leeds Naturalists Club.* 1876–77.
- From the SOCIETY.—*Proceedings of the Royal Geographical Society.* Vol. XXII, No. 1.

From the ROYAL ACADEMY OF COPENHAGEN.—Oversigt over det Kongelige Danske Videnskabernes Selskabs, No. 2.

From the SOCIETY.—Transactions of the Manx Natural History Society. Vol. XXVII.

From the AUTHOR.—*Studii Antropologici ed Etnografici sulla Nuova Guinea.* By Prof. Paolo Mantegazza.

From the EDITOR.—“Nature” (to date).

Mr. WORTHINGTON G. SMITH exhibited some flint implements from Devonshire.

The Rev. S. J. WHITMEE read the following paper in the absence of the Author.

The ETHNOLOGY of the MOTU. BY REV. WILLIAM Y. TURNER, M.D.

NEW GUINEA has recently attracted a large amount of attention, and all that has been written upon the subject has been read by an eager public. Many different accounts have reached this country regarding its people and its productions. These have only tended to confuse our ideas as to that far-off land. This confusion is due to a combination of circumstances. In the first place it is hard to realize the extent of New Guinea, and we forget that it is very much larger than Great Britain, ranking with Borneo as the second island in the world in extent. Writers on New Guinea have also failed to specify the exact locality from which their observations were taken. It is evident that as there are different tribes in New Guinea, the manners and customs of those inhabiting one part, may be, and in reality are, very different from, and in some cases even opposite to, those in another part. In our own country a description of the manners and customs of the Highlanders of Scotland would not be correct of the inhabitants of Kent, nor would it be right to use a description of either as applicable to the people of Great Britain generally. This has, however, often been done with regard to New Guinea. Some writers, also, have written not according to knowledge, but according to fancy, and in their case, distance has lent enchantment to the scene. Other reports are rendered inaccurate by the short acquaintance travellers have had with the people they describe.

In this paper reference will be made to that part of the south-east peninsula of New Guinea which lies between Redscar Head and Hood Bay, with special reference to Port Moresby.

The writer resided at this place for six months, which is the longest time any European has lived on that part of the coast, with two exceptions. the Rev. W. G. Lawes and Mr. And. Goldie, who are still in Torres Straits or New Guinea.

This part of the New Guinea coast is bounded by a barrier reef; it has a broken outline, and so gives rise to numerous deep bays and narrow peninsulas. The character of the country may be described as hilly, the hills on the coast being rocky, with little or no vegetation in the west, but being better clad towards the east. The conformation of the land denotes volcanic origin. This region is sparsely populated by a coastal tribe grouped together in small villages along the coast. It was a pleasant sight to see these villages as we steamed along the still lagoon under a tropical sun, some nestling beneath a grove of cocoa-nuts as though seeking a welcome shade, others perched as watch-towers upon a hill-top, and others, more erratic, reared on piles in the lagoon itself.

To the west of this region, as far as Yule Plain, and the Papuan Gulf, the coast presents a dismal flat marsh where the mangrove grows luxuriantly.

In the neighbourhood of Port Moresby, the hills are covered with a coarse grass, interspersed with mere apologies for trees of the genus *Eucalyptus*. As we proceed further along the coast towards Hood Point, the character of the scenery changes, the hills are clothed with trees and shrubs, and the cocoa-nut tree grows in great profusion. Occasionally also a green grassy knoll is seen, reminding one almost of our green fields at home.

Port Moresby in lat. $9^{\circ} 30' S.$, and long. $147^{\circ} 10' E.$, is named after its discoverer Captain Moresby, of H.M.S. Basilisk. It is situated at the head of a deep bay, and at a distance of about five miles from the somewhat narrow entrance to the bay. Port Moresby is the head-quarters of a people calling themselves the Motu. Here there are two native villages named respectively, Anuapata and Elivara, consisting of about 120 houses, and containing about 1,000 inhabitants. These two villages are about 200 yards distant from each other. The settlement generally is called Anuapata, or great land; it is visited by many different tribes, who come for the purposes of barter, often making an annual trading expedition. Port Moresby is therefore a centre of commercial importance, if we may call small things by imposing names. The Motu are respected and looked up to by the neighbouring races, and so are an important people.

The part of New Guinea of which we speak is inhabited by three distinct tribes, the Koiari, the Koitapu, and the Motu.

The Motu appear to be colonists from some other country which has not yet been determined. This I think, because they live along the coast, and never in the interior, and are generally at enmity with the inland tribes. They differ also from the other two tribes in their possessing canoes in which they engage in fishing, and in making voyages to distant parts of the country.

The Koiari are evidently the aborigines of this part of New Guinea, they live in the interior among the mountains, and go down to the coast occasionally for the purpose of robbing the plantations of the Motu, and trying to drive them away. They are darker in colour than the Motu, and more muscular in appearance.

The Koitapu may be best spoken of as nondescripts; they are a roving people living chiefly by agriculture and hunting. A small settlement of these people is generally to be found at one end of the Motu villages, and they preserve their identity as completely as do the Jews in our own time. They live also in the bush, either in groups of two or three houses together, or a solitary one. They do not remain very long in one place, but wander from place to place. Their manners, customs, manufactures, and language, are different from the Motu; they are distinct also in appearance, being of a darker shade and more savage expression. They live upon friendly terms both with the Motu and the Koiari. They resemble the latter in many points in which they differ from the former, and it is very probable that they originally belonged to the Koiari, although in the present state of our knowledge we cannot determine this. A longer residence among these three tribes will be necessary before their origin and history can be accurately traced out.

The Motu belong to the great Malayo-Polynesian family, being of a copper-brown colour, differing both in colour and features from the Papuan or Negrito race, which inhabit New Guinea to the west. It is my opinion also that both the Koitapu and Koiari are distinct from the Papuans, but my observations of these tribes have not been sufficiently numerous to determine the point, and so I confine my remarks to the Motu.

In his chapter upon the "Races of man in the Malay-Archipelago," Mr. Wallace speaks of the natives of New Guinea as being Papuans. His description of the "Malays," however, corresponds in a remarkable degree to the Motu, while his descriptions of the "Papuans" in the same chapter, would at once lead me to decide that the Motu are not Papuans. One difficulty in determining the question of race arises from the fact that different writers describe the same people in quite a different way. It is better therefore not to rely on written descriptions only, but to secure if possible photographs of

natives. Through the kindness of the Rev. W. G. Lawes, with whom I was associated, while on New Guinea, I am able to illustrate this account of the Motu with engravings copied from photographs taken at Port Moresby. For the purpose of comparison, my photographs are so arranged as to place that of a Motu between a Papuan and a Malayo-Polynesian, so that a glance will decide to which of the two great families into which the inhabitants of Polynesia are divided the Motu belongs.

It is, however, specially in profile that the greatest difference between the Motu and the Papuan is seen; it is to be regretted therefore that a large number of profile pictures have not been secured. The natives of the New Hebrides as well as the Torres Straits Islanders, who are Papuans, have decidedly a more monkeylike formation of the head than the Motu. In the latter the craniofacial angle is much larger than in the former.

The opinion that the Motu are distinct from the Papuans is strengthened also by the fact that they look down upon the black people as being much inferior to them. For example, Papuan teachers from the Loyalty Islands were looked upon as an inferior class of men, while Malayo-Polynesian teachers from Eastern Polynesia were received and treated as equals.

In the annual trading expeditions which the Motu make to Elema (Cape Possession), the Motu women never accompany the men, the reason being that they would be stolen by the black Elema men, who like light-coloured wives. On the other hand, when the Elema visit the Motu, women come as well as men.

The Motu are much like Europeans in expression, especially the children, many of whom were really pretty, with merry open countenances, and sharp bright eyes. This beauty is lost with age, and the adults are generally harsh and savage looking. This "premature old age and harshness of features" in savage races, Mr. Wallace thinks, is due to exposure, while hunting and fishing, use of the betel-nut, and want of a *regular* supply of food. This is eminently true of the Motu, who at certain seasons of the year are very badly off for food, and are always much exposed. Their style of wearing the hair, as well as some of their ornaments, especially the makolo, or nose-stick, gives them a more savage appearance than they would otherwise have. The adult women who shave their heads and do not wear the nose-stick are not savage looking. There is nothing repulsive in their appearance as a rule, and many of them are even handsome.

The hair is of a peculiar frizzly nature, but not woolly as in the negro. It is worn long by the young men and women, and forms a mop round the head. In some case it is quite straight.

Children and married women have their heads shaved; in the former, two tufts of hair are left long, one over the forehead, and another on the crown of the head. What the object of this fashion is we cannot say, but it is suggestive, and surely the mothers cannot resist the temptation afforded by these tufts of hair when they wish to punish a disobedient child. Shaving the head is also a sign of mourning. When the Motu start upon their trip to Cape Possession, all the young women shave off their fine mops of hair as a token of sorrow at the departure of their sweethearts. The change this makes upon their appearance is remarkable. When Miss Henao, our regular water-carrier, puts in her appearance at our door the next morning to get the daily supply of water, and without any sign of recognition one tells her to go away, her face expands into a broad grin, and she asks with a merry twinkle if we do not know her. The hair is of a brown-black colour, but not jet black, sometimes among the children it is sandy in colour, getting darker with age. This is characteristic of the Hood Point people. There is little or no hair upon the chin or any other part of the body.

The Motu are, if anything, below the average stature, and of slight build, which is probably due to the fact that they have not much food. At Hood Bay and in the interior, where food is more plentiful, the natives are taller and more muscular. Port Moresby was visited by small-pox about ten years ago, and the population was decimated by it. Two or three years ago, the mission vessel took measles to Port Moresby; the natives all took it and many of them died. While a few years ago, some hundreds of the men went off on their annual expedition to Elema, and were never heard of again; it is supposed that their canoes foundered at sea. These three circumstances have combined to weaken the Port Moresby population; hence a stranger's first impression of the youthful appearance of the people. In forming an opinion of the Motu race, therefore, due allowance must be made for these unfavourable incidents in their history.

The proportion of the sexes appears to be equal, and the children are numerous. They appear to live to a good old age, although from the causes already stated, this cannot be very accurately determined. When visiting at Hood Point we saw two Albinos, a man, and a boy. They were typical specimens, having light hair, weak eyes, and ulcerated skin. They were naked like the other natives, and presented a curious contrast to their copper-coloured brethren.

The people appear to live, upon the whole, moral lives: the marriage relation is observed, and illegitimacy does not prevail to any extent. Polygamy is not indulged in; even the chiefs content themselves with one wife like the other men,

except in rare cases. Even then the number of wives is only two or three, and in no case is there such an institution as a harem. It is reported, however, that some of the Port Moresby men have a second wife at a neighbouring village called Poripata; and certain it is that in this village the women predominate, and many of the Port Moresby men visit this village oftener than is requisite for strictly business purposes. The reason given by the Motu for not practising polygamy is the eminently true one, that the women would not agree together.

Infanticide is not known; they love their children, treat them kindly, and mourn for them when they die. We observed one mother whose face was bruised and bleeding in token of her grief for her infant whom she was burying.

Motu mothers suckle their children for a much longer period than is deemed either convenient or advisable by civilized mothers; in fact the mother does not wean the child, but the child weans itself.

It is a common sight to see a child *run* up to its mother and drink at her breast. One child is not weaned till another comes, and sometimes the two struggle with each other for the breast.

The consequence of this is that the breasts of a matron are large and pendulous. The Motu children are well nourished, and this is due to the unsophisticated notions of their mothers, and also the fact, for which they may be profoundly thankful, that there are no substitutes for the mother's milk in the country.

Among the Motu the women are looked upon as the weaker vessels, and the men regard their wives literally as *helpmeets* for them. The husband considers it his duty to chastise his wife when he thinks she requires it, and looks upon it as a virtuous action rather than otherwise. The women are however very well able to hold their own, and in their mouths their tongues are always a most powerful and often a most offensive weapon. The torrent of abuse and invective which proceeds from a Motu woman when she is roused (and it does not require much to accomplish this) defies description.

The men and women have their own allotted work. The women carry water, weed and tend the plantations, cut firewood, and cook the food; while the men till the ground, fence in the plantation, tie up the banana branches, cut the bananas when ripe, hunt and fish. There are certain occasions upon which the women go to fish—they gather all kinds of shell-fish; on these occasions the men stay at home. It is the duty of the husband to stay at home and nurse the baby when his wife is at the plantation or fishing. The women are the beasts of burden, they do all the carrying work. When a man and his wife return

from working in their plantation he walks a few yards in advance, carrying his spear over his shoulder; and his wife, staggering under a load she can hardly carry, with perhaps one or two children hanging on to her tails.

With respect to manufactures also, the men and women have their own particular branches of industry, which will be referred to more specially when dealing with the manufactures themselves.

Of the Motu dress not much can be said, as there is not much to speak of, it is remarkable for its simplicity; one article suffices the women, while the men are content with an apology for one. The Lami or girdle worn by the Motu women is the same as that worn by the South Sea Island women generally. It is made of the bark of a palm, or of the banana, or of a species of grass, according to the place where it is made, and it reaches from the waist down to the knees. These girdles are made by the women, they are not made at Port Moresby; but the Motu women buy them from the Elema or the natives of Kapati, a village up the Manumanu river. The girdle from Elema is red, while that made in Kapati is white. The Elema women themselves wear a girdle which has only a front and a back piece, leaving the thighs bare at the sides. The Motu women express themselves as being very much shocked at this indecency on the part of their Elema sisterhood!

Three or four of these girdles are worn one on the top of the other, thus making a good and effectual covering.

In walking, and especially in dancing, the women move the body so that the loose ends of the girdle swing from side to side. The women are very particular about this dress, and are never seen without it; it is worn by the little girls as soon as they are able to walk.

The dress of the men consists of a narrow strip of bark, or, and more commonly, a piece of thick cord wound once or twice round the waist and then passing between the legs. A slight modification of this dress, or the mode of wearing, it distinguishes the different tribes and people. Young boys go quite naked, and they do not adopt the dress of their fathers until they are well on in their teens. The men are very particular about their dress, scant though it be, and would as soon go without it as we would go without our clothes. For example, on going in to bathe a man will carefully divest himself of his garment, and lay it upon the ground as we do our clothes, dressing himself again when he has finished his bath.

If the garments of this people are scanty their ornaments are not so; their wardrobe consists more of ornaments than of clothes proper. Their ornaments consist chiefly of head-dresses, nose-

sticks, earrings, armlets, necklaces, breast ornaments—these are chiefly of shells or tortoiseshell.

The most common head-dress, especially among the inland tribe, is made of the feathers of the cassowary. It is worn across the crown of the head, thus forming an imposing crest, and is frequently the distinguishing mark of a chief.

A comb ornamented with a tuft of feathers, especially those of the white cockatoo, is often used to deck the head. The comb itself is made of three or four pencils of wood bound together at one end. It is used for combing out the ends of the hair.

The Koitapu have a fashion of binding a piece of native cloth round their back hair, in the form of a regular chignon.

Frontlets made of shell, a strip of banana bark, or of the skin of the cuscus or of sweet-smelling or bright-coloured leaves are common. The people of Hood Point wear a distinct frontlet which consists of seven or eight circular pieces of brick-red shell, of about the size of a penny, with a hole in the centre. These are worn across the forehead and are attached to the head by a tuft of hair being passed through the hole in the shell.



FIG. 1.

The makolo, or nose-stick, is shown in the illustration, fig. 1. It is the most striking ornament of this people. It consists of a pencil of white shell from three to eight inches long, pointed at both ends, and worn in a hole bored in the septum of the nose. Hairs are twisted round the stick at the ends, thus

making the black rings which give it a finish. This, like the ornaments already mentioned, are worn by the men only. The women however have the customary hole in the septum, through which a widow wears part of her "weeds." See fig. 2.



FIG. 2.

A small piece of stick or a roll of banana leaf is sometimes used instead of the nose-stick proper. The natives turn their nose-stick so as to have it well balanced.

The ears are pierced by earrings not in the lobe only but also in the superior margin of the helix. The earrings are generally made of tortoiseshell, but strings of small red beads or plates of tortoiseshell ornamented with red beads are now most fashionable. Girls are frequently to be seen with their ears turned down with the weight of beads hanging from them. Earrings are generally, though not exclusively, worn by the young women. The hole in the lobe of the ear is often filled with a bunch of sweet-smelling or bright-coloured leaves.

Necklaces are generally made of small shells strung together. They are worn alike by men and women. A necklace much worn by young women is one made of pigs' or dogs' teeth strung together. This necklace is much valued, and a young woman will on no account part with it, as it is given her by her lover, and is a pledge of his love, as the "engagement ring" is with us.

The kepore is a breast ornament or charm for use in war or while hunting. It consists of a piece of tortoiseshell ornamented

with pigs' teeth and the seeds of a species of mimosa. When fighting it is held in the mouth and is supposed to act as a charm upon life.

The most common breast ornament is a piece of mother-of-pearl, the shape of the moon when in the first quarter; it is suspended by a string from the neck.



FIG. 3.

Armlets are made of shell, skin, or some plaited material, and are universally worn. The toea, or white shell armlet, is one of the most valuable ornaments the natives have. It is made out of the lower segment of a conical shell, and is valued because ten of these armlets is the price of a wife. This armlet is used only on extra occasions.

The common armlet constantly worn by men and women is plaited strips of bark or grass. They are about two inches broad and are worn upon the flesh by part of the arm above the elbow. They are worn very tight, the skin projecting both above and below them but they do not appear to have any bad effect upon the circulation. They are often smeared over with red clay. Between the armlet and the arm is the only pocket which a Motu possesses, here it is they keep their tobacco. Bunches of sweet-smelling leaves are also often stuck in the armlets.

Strips of iguana or wallaby skin are often used as arm, wrist,

or finger rings. In time of mourning also the armlet and waist-belt are made of a particular kind of cane.

A string is sometimes worn, especially by the children, over one shoulder and under the opposite armpit, whether for use or ornament is not known.

The knee and ankle joints are also often tied round with a piece of string or bark.

Painting the face and tattooing the body are also done for the sake of ornamentation. Among the Motu the face only is painted, except in time of mourning, when the whole body is blackened. The face is painted when they dress for a dance or to go hunting; the paint used is an edible red clay, and black paint prepared by burning the cocoa-nut husk. Washing blue is now much prized for this purpose. The painting is very simple, and consists of one or two lines down or across the face, or round the eyes, forming a grotesque pair of spectacles. It is chiefly the young men who are decorated in this manner.



FIG. 4.



FIG. 5.

The custom of tattooing is carried to great perfection among the Motu women, whose bodies are covered with tattoo marks

resembling fine lace garments. In fig. 4 the marking will be seen as copied from the girl Tabuta. The paint used in tattooing being of a *blue* black it does not come out in the photos., and so I took an exact pencil copy of the marks on the girl's body. Tattooing is universal among the women, but does not obtain among the men, with the exception of an olive leaf marking in the clavicular region of some men, which probably denotes bravery in battle.

This marking is begun upon the face when the subject is a little girl, one line being done at a time, the chest, arms, &c., being done at intervals as she grows older.

The pattern upon the face is always as represented here, but the marks upon the body vary with the individual. The patterns are however always of a geometrical type; flowers, leaves, fish, or birds never being attempted.

The triangular marking on the chest (fig. 4) denotes that the girl who bears it is engaged to be married. When marriage is completed the spaces left bare, are filled up, and the marking extends as far as the knee. How it is done we do not yet know; it is the work of the matrons, and the subjects affirm that it is a painful ordeal. When freshly done the skin is rough, and there is a little inflammation. The marking is neat and symmetrical. It relieves the body, and has the appearance of a tight-fitting suit of clothes.

The food of the Motu consists principally of wallaby, fish, yams, bananas, cocoa-nuts, and sago.

They are not well supplied with food, and often suffer for want of sufficient nourishment. The land in the neighbourhood of Port Moresby is barren and unproductive, so the inhabitants have to a great extent to depend upon imported food. Their food and the sources whence it is derived differ in the different seasons, and it is between these seasons, or if one supply fails, that they suffer. Sago, upon which they mainly depend for some months of the year, comes from the Cape Possession. In the fall of the year the Motu visit Cape Possession, taking with them large quantities of their earthenware pottery for trade, and return with their canoes laden with sago.

In the spring the Cape Possession people come to visit the Motu, bringing large quantities of sago, which they sell for white shell armlets, &c.

This sago is the staple article of food till the yam season comes in. During our summer and their winter they live upon yams, bananas, and fish. In August the hunting season commences, and for two or three months they live almost entirely on the flesh of the wallaby. It is during this season that the natives have most to eat.

The sago already spoken of is prepared by the women, who, when engaged in the work, are railed in, and no man is allowed to go near the place, which is tabooed for the time being. When at Yule Island we saw some women at work, and on going near to observe the process were at once ordered off, not only by the women themselves but also by the men, who explained that it was the women's work and sacred. As far as we were able to see, the sago was simply dug out of the trunk of the sago palm and washed with water.

The principal meal of the day is taken in the afternoon when the people return from fishing, hunting, &c. The cooking is done by the women on an open fire outside the house. The meat, vegetables, &c., are all boiled together in the *uro* (an earthenware vessel). This is the only mode of cooking we have observed; when cooked the food is portioned out and placed in naos, or earthenware basins, out of which two or three eat in common. The food is conveyed to the mouth by means of the *bedi*, a cocoanut-shell spoon. The culinary art is in a more primitive condition than in most of the South Sea Islands.

The pig and dog are eaten, but are considered delicacies only to be indulged in upon feast days. The Koitapu eat snakes, iguana, and rats.

Of fruits, there are the cocoanuts, bananas, rose apple, and mango, but all of an inferior kind. The banana is used more as a vegetable than a fruit, being boiled and eaten before it is ripe. The natives do not care for foreign food except boiled rice, of which they will eat any quantity.

We can find no trace of cannibalism, and it does not appear to have been practised by them.

The Motu are not an athletic people; with the exception of dancing they indulge in no games. They are eminently lazy. Dancing is engaged in by the youth and beauty of the village, all painted and decked up in their best style, while the elders in the verandahs of their houses look on. The dance is very orderly, is performed with great decorum, and in strict time. It consists, as does our own, in the execution of various figures and movements to the time of the drums and the dull monotonous song of the dancers. Both sexes dance together, and are arranged in pairs. All stand in a semi-erect posture with knees slightly bent, and the body inclined forward; they keep step with each other perfectly. There is no hurry, excitement, or noise. At intervals there is a pause for rest, when conversation is indulged in, and the dance is resumed. The time for these dances is in the evening, especially when the moon is shining, when the dancing

is kept up till morning. There appears to be nothing indecent in these dances.

The merry, laughter-loving children are as fond of fun as their contemporaries here, and indulge in a variety of games. They make small windmills of cocoa-nut leaves, similar to those with which rag and bone men delight our juvenile community. The Motu children are as well versed in the intricacies of "cat's cradle" as are the English; while spinning a button or round piece of shell on a cord, and keeping a bladder up in the air by patting it with the hands, are favourite games. Boys with their miniature spears learn the art of hunting by spearing a cocoa-nut husk as it spins along to the ground, it being thrown by their comrades at a distance. They amuse themselves also for hours together in the water spearing or shooting arrows at small fish, and then kindle small fires on the shore in which they cook what they catch, and enjoy a meal specially their own. The children are left much to themselves to devise their own amusement. They make their own toys, which gives them a greater interest in them, and they never weary of play. In this way the days pass happily by, and these merry children know nothing of the tasks of school, the troubles of keeping their clothes clean, or the miseries of being washed; troubles that vex the lives of almost all civilized children.

With respect to disease and its treatment little is yet known. Upon the whole, the Motu appear to be a healthy people, although they certainly suffer (to a certain extent) from the fever of the country. Ulcers on the legs are common, especially to the west of Port Moresby; a few cases of elephantiasis were also seen. The lafa, or ringworm, is very common, and nearly all young children are afflicted with the toña, warty eruptions on the margins of the mouth and arms. Any deformity or disease is concealed as much as possible from view, and the subject does not like attention drawn to it. They connect a sudden attack of illness with an evil spirit whom they call Vata. He is supposed to live in the bush, but they neither worship nor propitiate him in any way. When a person is taken suddenly ill they say Vata has killed him, his life is despaired of, and little or nothing is done with him. There are a few natives who profess to have some power in charming disease, and sometimes certain leaves or roots are used as medicine, but the belief in these native doctors is small. While at Port Moresby an influenza epidemic broke out among the natives and carried off a number of them. After an epidemic of this nature the natives drive the disease away by beating sticks, shouting, making a noise generally and throwing burning sticks into the air.

Many of the children die in infancy, but not from any special

cause as far as we could ascertain. Their trust in European medicines is not yet established, although they are beginning to feel the benefit of sulphate of copper dressing for their sluggish ulcers, and chlorodine for colds in the chest. While at Port Moresby only one opportunity of practice presented itself, but the natives would not sanction the operation. A young man was taken suddenly ill; Vata was supposed to have killed him.

On examination he was found to be suffering from distension of the bladder, resulting from retention of the urine from a spontaneous stricture, caused by undue exposure. It was proposed to use the catheter, and a number 6 was shown to the man and his friends and the *modus operandi* explained; they objected, on the plea that the instrument was too large for the passage, and argument failed to convince.

Fever and ague prevail along this coast; all Europeans who have resided for any length of time upon it have, with one exception, been attacked, and many natives from Eastern Polynesia have fallen victims. The fever is often a bilious fever. Its peculiarity is the head symptoms which accompany or succeed it. It is not uniform in its mode of attack; sometimes it is ague in its ordinary three stages, at other times this is accompanied or replaced by violent vomiting and retching when nothing will lie on the stomach; in other cases it renders the subjects insensible at once, in which state they continue for a week, and then die. In all its forms there is severe headache, often wandering, and after an attack intense pain in the back of the head and the muscles of the back of the neck. The attacks are not regular in their appearance or duration, sometimes they occur every second day; at other times every day, while at others they last for a week. At all times the effect is complete prostration.

Quinine seemed to exercise little or no prophylactic power, as the fever was felt by those who used it continually as well as by those who never took it. It was our belief that if it had any effect at all it was in lessening the severity of the attacks.

Among the Motu the death of relatives or friends is marked by many expressions of sorrow. The extent of the mourning is regulated by the status and age of the deceased. Old people and young children are not mourned for as are those who die when in the prime of life. A chief is buried with more ceremony than a common man. Shortly before our arrival at Port Moresby, the son of one of the chiefs died, and we had an opportunity of observing the burial ceremonials. A description of this will give an idea of all.

When a person becomes ill the relatives and friends assemble in the house, which becomes literally crowded with men, women, and children. The more immediate relations sit round the

patient as nurses, while the women wail and cry. As soon as life is extinct, but not before, the drums begin to beat, and the wailing increases. This howling is kept up night and day for two or three days, and a more hideous, unearthly noise cannot well be imagined. The friends of the deceased take turns at wailing and beating the drums. When the days of wailing are ended a grave is dug in front of the deceased's house; over the grave a small hut is erected, in which the widow has to sit and live for a certain period. The body is placed in the grave, laid upon a mat or piece of native cloth; the grave is not filled in, but the body is left exposed. After a certain time the corpse is lifted out, the elbow and knee-joints are rubbed with red clay, the widow smears her body over with the juice from the putrid corpse, and the grave is covered in. After another period has elapsed the hut is pulled down; still later the posts that supported it are removed, and lastly the boards which were placed over the grave are taken away, and no trace of the grave remains except in the fresh gravel laid over it.

Each of these stages in the burial ceremony is marked by a feast; the bunches of banana, &c., which are to supply the feast are hung on a pole at the grave. The body is laid in the grave with the feet to the sea and the head inland; while in the South Seas, generally, the body is so placed that the face will be towards the rising sun.

The relatives of the deceased go into mourning by blackening their bodies all over, and wearing a particular kind of armlet and waistbelt made of cane. The widow shaves her head, lengthens her lami, or girdle, and wears her husband's hair and some of his goods suspended round her neck. At a village near Port Moresby we saw a widow with four or five inferior maxillary bones hanging round her neck, evidently the relics of some departed husbands or children. She was amused at our efforts to buy these remains of her loved ones, but would not consent to part with them.

The Motu believe in the immortality of the soul, they say there is something in man which does not die with the body, but leaves the body at death and goes to a land they call Taulu. Taulu is no particular region, but just space where the Tirava or spirit lives for an indefinite time. They believe also that the departed sometimes appear again on earth. Children will run into the house and tell their widowed mother that their father has come back to see them; she goes to the door, and true enough sees her husband standing with his feet in the ground, as if he had risen out of it. She tries to catch hold of him, but he sinks into the ground again. These things are not cited as nursery tales by the people, but are most firmly believed by them, and

they appeal to the evidence of their own eyes in confirmation of these appearances, if we express doubt as to their truth. They believe also that when a person dies, the spirit of some departed friend comes to carry the spirit away. These beliefs are most interesting to consider, and we only desire to know a little more about Taulu, and the occupation of the souls while there; but these points will be cleared up as our knowledge of this people increases.

The dwelling-houses of the Motu are very rude structures, and present more the appearance of barns than habitations. They are always built upon poles raised 10 or 12 feet from the ground. The object of this raising off the ground is not clear, but most probably it is found to be more healthy. The houses are grouped into villages, which vary much in size. They are built either on the shore below high-water mark, or a few hundred yards from the shore in the lagoon. In the former instance they are arranged along the shore in a single line, while in the latter case, they are arranged in two straight lines opposite to and facing each other. Sometimes also there are houses connecting the two lines at one end, thus forming three sides of a square. Each house is approached by a ladder from the water, and in front of each house is a platform of boards; these are united together, so forming a kind of street.

The object of building their houses in the water is as a protection against the inland people, who come down to the shore and make raids upon the plantations of the Motu, fight with them, and burn their houses if they can. As the inland tribe do not possess canoes, they have no means of reaching the houses built in the lagoon except by swimming, when they may easily be speared; hence the protection afforded by the water.

The shore villages nestle under the shade of a cocoa-nut grove; between the trees and the houses is in an open space, the "ariara," or street, of the village, where the villagers sit, work, dance, &c.

The houses consist of a frame-work of poles thatched with grass or the pandanus (screw-pine) leaf, floored with boards made out of the sides of old canoes. The house is reached by a rough stick ladder, at the top of which is a small platform where the people sit, the posts of this are hung with bones of fish, turtle, dugong, &c., mementoes of feasts which, though past, are to memory dear. The house is entered by a low door, consists of one room, and is entirely destitute of furniture. In the centre of the room is a square place laid with clay, this is the fire-place; the fire is an open one, and the smoke finds its way out of the door, which also serves as chimney. There are no windows in the house, but at the opposite end from where we entered is another

small door with another small platform, and this faces the open sea. In the roof are stuck spears, &c., while bags containing the household goods hang from the rafters.

At Papaka, an inland village near Hood Point, the houses were very much better built, and were divided into three apartments; while at a small bush village belonging to the Koitapu we observed a house built among the branches of a high tree some forty feet above the ground.

The pursuits of the people consist chiefly of hunting, fishing, and agriculture. Wallaby abound through the bush and are hunted every year about the same time that the hunting season begins at home. The Koitapu tribe are the principal hunters, the Motu being chiefly fishers. The mode of hunting is peculiar, and consists in burning the long grass that covers the plains, and trapping the animals in nets. A large tract of country is chosen as the scene of the hunt; strong nets are erected in a semicircle round this tract, thus forming a netted wall, the nets being fastened to spears stuck into the ground. A number of men armed with spears and hand-nets remain in ambush beside the nets, while others go to windward and set fire to the long grass. The wind drives the fire towards the nets, and all the animals in that tract of country are enclosed in a wall of fire and nets. The wallaby, maddened by the fear of fire and the shouts of the hunters, rush against the nets and are speared or caught in the hand-nets. The fire is damped out with green boughs. Many wallaby are caught in this way, they are carried whole till within a short distance of the village, when a fire is kindled, the hair is singed off the body; the animals are then cut up and divided among the hunters. This singeing process gives the flesh a disagreeable taste and smell.

The hunting season lasts for two or three months, the whole of the country side being burnt in this way. During this season the natives are well supplied with food. The hunters start for the field early in the morning, and do not touch food till their return in the afternoon. They do not engage in conversation on their way to the hunting ground, nor do they like being spoken to, as it is considered unlucky. They dress themselves up when going to hunt, as their fine appearance is supposed to favour their success. The native dogs are used in hunting; in fact it is chiefly for this purpose that they make a domestic animal of the miserable howling animal dignified by the name of dog in New Guinea.

The principal industry of the Motu is fishing, which is done entirely by the net, hooks never being used. The only fish-hook seen among the people was one got from an Elema man; it consisted of a simple unbarbed tortoiseshell hook. The fishing

ground is near the reef opposite the harbour. The fishers start about six o'clock in the morning, and return about five in the afternoon. Many kinds of fish are caught, and they form one of the chief articles of diet with the Motu all the year round. The dugong is caught by the natives, and highly prized for food. It is caught in large strong nets, made of fine rope, similar to the wallaby nets.

At Kerepunu, Hood Bay, a regular fish market was held, the fish being exposed on stalls at the doors of the houses; fish were exchanged for yams, &c., the produce of the field; and keen bargainers some of these dusky fishwives were.

The Motu depend much upon the cultivation of the ground for food, each family therefore owns a portion of land for a plantation. The plantations are all fenced in to protect them from the inroads of the wallaby. The ground is tilled, fenced in, and planted by the men, who also tie up the branches of banana and cut them when ripe; while the women weed the plantation, trim the banana, gather the yams, &c. The mode of tillage is as follows: six or seven men, armed with a long stick sharpened at one end, stand in a row, thrust the stick into the ground and turn up a large clod; they work in time, and sometimes by word of command. In this way the field is very effectually tilled, and, if done regularly, presents the appearance of a ploughed field. The plantation generally contains bananas and yams.

The weapons of war used by the Motu are spears, bows and arrows, clubs, shields, and the *kōta*. The spear is made of hard wood, and is barbed on one side only; this is the only kind of spear found in this part of the country, and is used both in hunting and in battle. The bows and arrows resemble those of the South Sea Islands generally, excepting that the arrows are not so finely carved, a plain notching on one side being sufficient. The club used by the Motu is a simple but effective weapon, and consists of a round flat stone sharpened at the edges, the handle is formed by a stick which passes through a hole in the centre of the stone. A bar of hard wood five feet long, three inches broad, and about one inch thick, is also used as a club.

The shield is simply a flat piece of board, ornamented with matting and feathers on one side, and having the handle upon the opposite side.

The *kōta* is a loop of cane with a barbed arrow-head fixed in the centre. It is used when pursuing an enemy to put over his head, pull him up, and then run the arrow into his neck. It combines lightness with great strength, which render it a most effective weapon.

In England certain towns are known as the seats of particular industries, so among the Motu each village excels in some special industry. There is therefore a constant trade carried on between the different villages. The manufactures of the Motu are chiefly ornaments and household utensils. Kapati is noted for its women's dresses, Tatana for red shell ornaments, Hula yields cocoa-nuts, while Port Moresby is the centre of the potteries. Most of the ornaments used by the people are made by grinding down shells. Holes are bored in the shells by means of a rude drill, the point of which is a sharp flint.

The Motu are skilled in the manufacture of rope and cord; what they make in this way would be creditable to a more civilized people. This industry is engaged in by men, who make good whipcord by twisting the bark of the paper mulberry upon the bare thigh. The cord is used for making kiapas or bags, fishing nets, &c.; the rope, for rigging their canoes.

The *kiapa* is a netted bag used for all carrying purposes, it is a woman's market-basket, and a Motu woman is rarely seen without it. It is carried on the back, being suspended from the head, the handle passing across the head just over the forehead. In this way very heavy weights are carried, and the result is a furrow is produced upon the head where the handle rests. The *kiapa* is also used as a cradle, the infant being put into it, it is hung from one of the rafters, and the child lulled to sleep by being swung backward and forwards.

When going from home, the men generally provide themselves with a small *kiapa*, which they carry under the arm, the handle being over the shoulder. This they use for holding their lime pot for betel-nut chewing, the nuts themselves, a plug of tobacco, and such like treasures.

The chief industry of the women is the manufacture of earthenware pottery. There are three kinds of vessels made, the *hotu*, the *uro*, and *nao*. The *hotu* is a globular vessel with a small mouth, it is used for carrying water in; a good-sized one will hold a bucket and a half of water. It is carried upon the back of the shoulder. The *uro* is a *hotu* with a much wider mouth; it is used for cooking purposes. The *nao* corresponds to our bowl, and may be described as the lower half of the *hotu*, it is used as a dish or plate to hold cooked food. These vessels are made of clay and sand, a red and a black clay being used; these are pounded down, mixed with water, kneaded to the proper consistency, then worked into the required shape by means of the fingers, and finished by manipulation with a round stone and a wooden beater. The vessels are made in two pieces, one being the body, the other the mouth. The moulding of the two parts together, and the finishing is

done by beating the clay with a piece of wood shaped like a man's hand, while a round smooth stone, the size of a large apple, is held inside the vessel, which rests the while between the calves of the potter. In this way they are made perfectly round, smooth, and of equal thickness throughout, the thickness being about one-eighth of an inch. When finished they are set upon the ground to dry, and then fixed in an open fire, the fuel being heaped all round them. When properly baked they are taken out and sprinkled with a decoction of bark, which gives them a black coating. In this way very strong serviceable vessels are made. The chief seat of this manufacture is at Port Moresby, and large quantities are exported annually to Elema, &c., in exchange for sago, yams, tars, lime, etc.

The Motu are not a shipbuilding community, the reason being that they have not the timber. All the wood they use for their houses, and for fencing purposes is brought from Lealea, about 17 miles to the west of Port Moresby. At Hood Bay, where there is a large supply of timber, shipbuilding is vigorously prosecuted. While there we saw two men hollowing out a large trunk for a canoe. Standing opposite to each other, they swung their long stone adzes over their shoulders, dealing blow after blow in regular succession, as riveters do their hammers, the one cutting the wood with the grain, the other chopping across the grain what the first had cut, thus making the chips fly apace. The adzes were of stone, with wooden handles two and a half feet long, and when used in the way indicated by two tall powerful men, did their work most effectually. We thought more of the Stone Age after seeing this than we had done before. The canoes resemble the ordinary South Sea Island canoe—a hollowed-out trunk with an outrigger. They are propelled with paddles or a pole, or by means of a sail. The sail is a piece of matting between two poles; the poles are fixed temporarily in the bottom of the canoe, and a rope from them to each side of the canoe not only stretches the sail but keeps the poles erect. The rigging is thus easily managed, the canoes sail well up to the wind, and weather a rough sea very well.

The large canoes, or lakotoi, in which the Motu make their long voyages are clumsy, although elaborate structures, and are more like square rafts than boats. They are made by joining four or five large hollowed-out trees together. Upon this hull a platform is erected which projects over the side of the hull two or three feet all round. Upon this again, bulwarks eighteen to twenty-four inches high are made at a little distance from the edge of the platform. Part of the space within the bulwarks is roofed in, to afford some protection from the weather, as sleeping quarters. In this space also a network of shelves is

built for the purpose of carrying the pottery to be traded with. One or two small trees with the branches lopped off serve as masts, the spreading roots being bound down to the hull to keep them erect. The part of the tree where it has forked or branched is used as the pulley for hoisting a large mat sail, curiously shaped like a crab's claw. The mat is bounded by two long bamboos, which stiffen it.

These boats hold about one hundred men as well as a great deal of luggage, but are most unsightly, unwieldy structures. The anchor is a large stone enclosed in a netting of strong cane. The cable is also of cane, as is the standing rigging, of which however there is very little; the various sheets are of rope.

There is a great deal of work connected with the building of these canoes, and much superstition mixed up with them. When the hull is finished, for instance, it must be anchored out in deep water every night, because if left upon the beach it will feel insulted at being treated like a common small canoe, and the voyage will be unsuccessful. The lakatoi is therefore treated with all the respect due to a vessel of large size. A new boat is built for each trip, and for five or six weeks previous to the departure of the expedition the village presents quite a lively appearance. The women are all busily engaged in pottery manufacture, while the men are making rope or building the canoes.

On launching one of these canoes they must have trial trips for three days, and the belles of the village dance on the platform while the canoe sails about the harbour.

The Motu are not a musical race, and they possess only two musical instruments, the kaba, or drum, and the bibo, or Jew's harp; the latter is rarely seen while the former is in constant use. The drum is shaped like an hour-glass, having the handle at the narrow part; it is hollowed out of a solid piece of wood, and has an iguana skin stretched over one end, the entire instrument being about two feet long. It is played by striking the skin with the palmar surfaces of the fingers, the sound produced being somewhat similar to that of our own drum. The drum is used in dancing and in mourning for the dead. Mr. D'Albertis found the same drum among the natives of the Fly River, but of a very much larger size.

The Cape Possession people have a different, and much inferior drum. It consists of a piece of bamboo about two feet long, with a tongue cut in one end and extending to the middle. The sound is produced by striking the tongue with a stick, which makes it vibrate and produce a dull note.

The bibo is a small insignificant wooden instrument, more like

a knitting-needle than anything else, from which even a native can produce only an almost inaudible sound.

The Koitapu make a rude kind of cloth from the bark of the paper mulberry, but with this exception no native cloth is made.

The Motu have no god or gods, no belief in a Supreme Being, no religious observance, and no sacrifices or offerings. In introducing religion, therefore, it has to be built up from the foundation, and cannot be presented, as in some other countries, as a perfect system to take the place of one which at the best, is full of superstition and error. This absence of religion is the more remarkable as they believe in the immortality of the soul: hence in spirits. The Motu are a highly superstitious people, as is evidenced by many of their customs; as the use of the kepole in war.

What has been said of the heart generally is most true of this people, they are "deceitful above all things and desperately wicked." Deceit and lying seem to be part of their very existence. Children display a propensity for stealing as soon as they are able to walk, as though it were instinctive. They steal as readily from each other as from strangers, nor is it looked upon as a crime unless the thief is taken in the act, when he is severely handled. When a theft has been committed, although the thief is known, the owner of the article takes no steps for its recovery. Plantation robberies are frequent, and when they occur the woman who tends the plantation goes down to the village, and standing a little distance from it, abuses the community generally, and the thief in particular, at the pitch of her voice, and in as strong language as she can command, and at the best they are not noted for refined expression. The people of Tatana, a small village near Port Moresby, have no plantations, and so they live by plunder.

It has been said of the Malay race generally that they are an undemonstrative, impassive people. This is eminently true of the Motu; they take everything in an easy matter-of-fact way, except when a quarrel occurs, when the excitement is quite out of comparison with the cause. Presents are received as dues, the recipient not expressing any thanks or even looking at them, but more generally hinting in a quiet suggestive way of some other article he is in want of. They are most shamefaced beggars, and beg upon every occasion. Their maxim seems to be, "It is more blessed to take than to give," and they give all their attention to the "more blessed" side of their maxim. If by any chance you do get a present from a native, you are repeatedly told it is coming before it appears, and as often reminded of the fact after it is given, and each time the subject is mentioned you are expected to show your thanks to the donor in a tan-

gible way. It is therefore cheaper to buy things in New Guinea than to receive them in presents. A present is sometimes taken back if a tangible acknowledgment of it is not speedily forthcoming.

In the "Contemporary Review," vol. xxi, page 397, the Rev. S. J. Whitmee of Samoa, in an article on the Malay and the black races says of the former there are only two conditions when they are noisy and excitable, "when working in great companies, they make a great noise; and in war they are furious." This is true also of the Motu. In the same article, ingratitude, circumlocution in speaking, kindness to children, freedom and carelessness in boating, are mentioned as characteristic features of the Samoans: these are also applicable to the Motu.

Prominent in the character of the Motu is what may be termed a conservative tendency. The Motu does a thing simply because his father did so. The idea of change, a departure from use and wont, seems never to enter their heads. This is observed, not only with respect to foreign things, but also their native customs; take for example the manufacture of lime. This article is highly valued, because it is used in chewing the betel-nut. It is made by the Koiari, or inland tribe, who come down from the interior to Port Moresby, gather shells on the beach, carry them twenty miles inland, burn them and make lime, then carry the lime down to the coast, and sell it to the Port Moresby people. The latter will not make it for themselves, because their forefathers did not do it, and it is done by the Koiari. If such a feeling exists with regard to their own produce, it is easy to see how it will operate against the introduction of things foreign.

They admire all our things, understand and admit the utility of all of them, allow readily that we do things very much better than they, but there it ends. "The English know a great deal, but the Motu are foolish and know very little." The idea of trying to improve themselves, of adopting anything new, is quite foreign to them. They appear to look upon all outside of them as essentially distinct. The bearing of this feature upon the introduction of civilization and the Gospel will be readily seen, it is almost an insuperable barrier. Our religion is a very good one, they do not dispute that, but it is *our* religion, they have their own way, with which they are quite satisfied; we are a different people, hence our different customs. Here the matter ends; they agree to differ from us. Moreover, our religion comes to them bound up with certain restrictions and restraints which they are unwilling to adopt. It demands the use of more clothing than they have from time immemorial deemed sufficient, it imposes a restraint upon one day in seven, when the ordinary avocations of life, hunting and fishing, must not be pursued. If

they accept our religion, therefore, they are fettered, and not as free as in their old régime, so no wonder they say "the old is better." They have no religion, do not feel the want of one, and therefore the only question with them is the practical one, which has its supporters even in our own country, "Is it worth the trouble? Will it pay?" Any higher considerations are very far from their mind, at least for the present.

There is one foreign habit which the Motu have adopted: this is the use, with them also the abuse, of tobacco. The weed is largely used by men, women, and children; mothers give it to their infants to make them sleep while they are away at their plantations. Tobacco is not cultivated by the natives, nor does it grow wild; they depend for their supply upon foreigners, who have evidently introduced it. It is not used by the natives of Cape Possession, Yule Island or Hood Bay. Since the Mission was established at Port Moresby the people have received their entire supply of tobacco through the Mission, and their name for the Mission vessel is "The Tobacco Ship." Mr. D'Albertis, in his recent exploration up the Fly River, found tobacco largely cultivated and used by the natives, who also use it as an article of barter.

The baubau, or tobacco pipe, does not resemble our pipe in any particular; it consists of a piece of bamboo about two feet long, open at the one end, and having a small lateral hole near the other end. The tobacco to be smoked, with a leaf rolled round it, is stuck into the small lateral hole and lit. The mouth is applied to the other end, and the air is exhausted from the bamboo by suction, tobacco-smoke taking its place. When the tube is filled with smoke the plug is removed, the mouth is applied to the small hole, and a good "draw" is taken, the smoke being swallowed. The pipe is passed round, each one taking a draw in this way till it is empty, when the process is repeated. A boy is generally employed to fill the pipe for his elders. The natives have become slaves to the weed, and will rather want anything than their smoke, in fact, when food is scarce, they almost live upon tobacco.

The Motu are dirty in their habits, and as they seldom or never wash themselves their bodies are caked with dirt. When in close contact with them an unpleasant odour is perceptible. Their huge mops of hair favour the breeding of lice, which they search for, catch, and eat from each other's heads.

Their villages are not clean, fæces and all manner of offal being deposited in every direction; the pigs and dogs also being allowed to run about the village. In sleeping they use no pillow except what is furnished by their arms, and generally no covering, although a calico sheet is valued by them. Their

favourite posture when resting about the village, is sitting upon their heels with their toes resting on the ground. The women and children usually sit on the ground with their legs straight out in front. When visiting in a European house they choose the best seat, being partial to an armchair or sofa, and never squat upon the floor in token of respect, as do the South Sea Islanders.

They have no marriage ceremony. Ten white shell armlets, two shell necklaces (about a yard long), a pig and an axe are given by the bridegroom to the father of the bride, and he takes his wife home.

They do not always marry in the same village, but the people of different villages intermarry. If the young wife does not consider she is well treated, she does not scruple to leave her husband and return to the shelter of her father's house.

The natives have one name only, and it is generally the name of a common object: Boroma (a pig) and Makani (wallaby) being women's, Kaba (a drum) and Ila (a hatchet) men's names.

The Motu do not appear to have any form of Government. Every village possesses a certain number of chiefs, the eldest of the number generally having the most influence. The office is hereditary, descending from father to son. The distinction between the chiefs and those they are chiefs over we cannot yet determine. The chiefs as a rule possess little or no authority, and have little power in quelling disturbances, their advice is, however, taken in any matter affecting the interests of the village. At Kerepunu the chiefs have more authority than at Port Moresby.

Their public meetings appear to be held while they are all in their houses, the speaker sitting in his own house, shouts out what he has to say, so that the whole village may hear.

The land round the villages is owned by the villagers, the chiefs having more than others. It is a difficult matter to find the right owner of any land; and unless great care is taken its price will have to be paid over and over again to each new claimant.

The domestic animals of the natives are the dog and pig. The dog is a small, thin, sharp-nosed, yellow-coloured animal, allied to the Australian dingo, but evidently an inferior type. It never barks, but whines hideously; the dogs of a village all whine in chorus. They are great thieves, like their masters. The natives value them not only for food, but especially for wallaby hunting.

The New Guinea pig is a long-legged, long-snouted pig of a deep brown colour, striped with yellow. There is a young specimen in the British Museum. It is highly prized for food.

In some villages red and green parrots and cockatoos are kept on sticks outside the houses. These birds are kept on account of their feathers, which are used for ornamenting their shields, &c.

The wallaby when young is sometimes trained and kept as a pet in the house.

The fauna of New Guinea has as yet proved to be similar to that of Australia, with one or two exceptions. The wallaby, cuscus, flying phalanger, bat, bandicoot rat and different snakes are found. Snakes are not so abundant as in Northern Queensland, nor are they so dangerous, there being only one venomous species known.

Just on leaving Port Moresby a new animal was brought to Mr. Lawes from the interior. We were not aware of its existence before, and the natives had never spoken of it. The specimen was a young one: the animal has a duckbill, small eyes, burrowing feet, and bristles over the body. Mr. Lawes preserved it in spirits and sent it to Prof. Rolleston of Oxford. It has been described as *Echidna Lawesei*.

Several Lepidoptera and insects in my collection prove to be new, and have been incorporated in the British Museum collections.

The language spoken by the Motu belongs to the Malayo-Polynesian class, and is characterised by its softness and absence of inflection. The coastal villagers speak the Motu with an occasional divergence in particular villages, while the language of the Koiari is quite distinct. At Hood Bay (Kerepunu) a different dialect is spoken, which bears a strong resemblance to the Motu. In his voyage to China Straits, Mr. Lawes was struck by the increasing resemblance of the dialects spoken to the Samoan as he went further east, a resemblance not in root forms only, but in words, a fact which favours the supposition that the south-east peninsula of New Guinea has been peopled from the east.

The Motu dialect has been reduced to writing by Mr. Lawes. It contains an alphabet of eighteen letters. The language is a full one, but bald, the nouns being indeclinable, and having neither gender nor case, the verbs no moods or tenses, time past, present, and future being gathered from the context. There is a dual and two plurals, inclusive and exclusive.

In the formation of words there is a marked tendency to the repetition of syllables, as bobobobo (to jet out), kokokoko (nail), kololokololo (all). The comparative and superlative are expressed by repeating the positive or emphasising it.

In no case do two consonants occur together, there is always a vowel between; but in the case of *t* it is often pronounced *ts* as

in *ate* pronounced *atse*, the letter *s* is also sounded *ts*. The aspirate is often used before words beginning with a vowel, there is no rule to regulate its use; *r* and *l* are as a rule interchangeable, as *revareva* or *levaleva*, tattooing. In some cases the natives of a particular village are distinguished by some peculiar pronunciation, as in the natives of Tatana, who use a nasal *n* for *l*, *nasi* instead of *lasi*, *no* and *naw* for *lau*, &c.

In the construction of the sentence the verb is placed last; in questions the interrogative is usually, though not invariably, last.

There are neither articles nor conjunctions; but particles as *to*, *e*, *ai be*, and suffixes *na*, *mu*, *ku*, which have no meaning, but are used for the sake of euphony and idiom; sometimes the latter denote the possessive.

The only change in the verb is in the prefix *a* to indicate the causative, as *dipa* to know; *adipa* to cause to know. In these cases the prefix is followed by the passive suffix, so *adipa* becomes *adipaia*.

The word *vata* is sometimes used as the sign of past or present time, but it is more generally used with particular words, as *mate*, death, always takes *vata*. The use of this and one or two similar words is strictly idiomatic.

The use of the negative instead of the positive is characteristic of the Motu, *malaki lasi* not little, to denote great. A positive and a negative are often used together by way of strengthening an assertion. The numerals run up to a million. There are no names for the days, but there is a word for year, and the year consists of twelve named months. The hours of the day are marked by a reference to the position of the sun at that hour. The new moon is hailed with joy, all the children making a noise by clapping their hands and their lips as they shout.

Mr. Lawes has compiled with much care a vocabulary of over 900 words which he will, doubtless, publish with a record of all his travels on his return to England next year.

He has also translated several hymns into the Motu, and commenced a Scripture History; a small lesson book has also been printed in the language. Specimens of these translations are given to show the construction of the language.

The connection between the Motu, Malay, and Polynesian dialects will be seen in the following table:—

ENGLISH.	MALAY.	POLYNESIAN.	MOTU.
Bird	Manu	Manu	Manu
Cocoa-nut	Nyu	Niu	{ Kalu, young Niu, old
Come	Mai	Mai	Mai
Eye	Mata	Mata	Mata
Fruit	Bua	Fua	Huahua
Hand	Lima	Lima	Ima
Road	Dala	Ala	Tara
Woman	Bawine	Fafine or Vaine	Haine
Water	Wai	Vai	{ Ranu, cold Vai siahu, not.

Ane Toi.

Tilava Helaka oi mai,
Ai patipati na noho,
Oi namo siakau mia,
Taina mailais, ai apia.

Hymn Third.

Holy Spirit you come,
Us besides—dwell,
You good plenty abides
A little bring, we have

Karoana taulabani. Sabbati dina helaka Iesu hanua loa, ia tau
Division eight. Sabbath day sacred Jesus the town walked he a man
matakepulu itaia. Iesu memero ia enanatai itia Koau, Lohiapata e,
blind saw. Jesus disciples him asked they said Chief!
matakepulu unai taika dika karaia, ia, ia tupuna ia unuheto
blind man there who bad make, he, his parents, he like that
vara, mata dika, hapopai lasi.
grow, eyes bad, bright eyes not.

The result of our work among these natives during the three or four years that the Mission has been in existence is very small—it is merely the sowing time. The only apparent change is that the natives live a quieter and more peaceable life. The residence of Europeans has had the effect of causing a more friendly feeling to exist between tribes which were previously at constant enmity. Even this is a step in the right direction and a thing to be desired, and is, doubtless, but the first step in a reformation as marked as has taken place in many of the islands of the sea. The greatest obstacle to the work in this country is the unhealthy climate, and it is a losing game to fight against fever and death. It is hoped that more healthy localities will be found in the direction of China Straits, and in the search for these Mr. Lawes is now engaged. Let us hope that the high hopes which were entertained concerning this field when it was commenced may not be damped, as they undoubtedly are, at the present time, by the future history of the work, but may they be more than realised.

DISCUSSION.

In reply to questions asked, MR. WHITMEE said the Gilbert Islanders wear the skulls of deceased relatives suspended from the neck. A woman carries about in this way the skull of a deceased

husband or child as a token of affection. The grave was made inside the house occupied by the family of the dead person, and the body, placed in a sitting position, remained for some days but slightly covered, until decomposition had advanced far enough to allow the skull to be lifted off.

He could not say with what instrument the Motu shave their heads, but he had known sharks' teeth, sharpened shells, and strips of bamboo used for shaving in some parts of the Pacific.

In the Samoan Islands very little attention was paid to the graves of the dead, especially of the common people. All traces of most of them soon disappear. Skulls and bones are frequently found in digging where there are no indications of graves on the surface.

He did not know of anything like guilds for the protection of trades. But trades and manufactures were hereditary. The sons follow the trade or "profession" of their father as a matter of course.

The Samoans sometimes buried valuables with the dead. They did not bury implements and such things as might be supposed to be useful to the spirit, but highly prized garments or fine and costly mats. These were intended as a mark of affection for the deceased. A few years ago, on the death of the King of the Hawaiian Islands, a very costly feather mantle, worn only by royalty, was buried with him. He believed only one other mantle of the same kind remained in the islands, which made the offering the more valuable.

The PRESIDENT then read the following paper, and exhibited a series of chert implements, illustrative of his remarks.

On a DISCOVERY of PALÆOLITHIC IMPLEMENTS in the VALLEY of the AXE. By JOHN EVANS, D.C.L., F.R.S.

In the Albert Memorial Museum at Exeter may be seen a large number, some 50 or 60 in all, of Palæolithic implements, collected by the energetic curator of the establishment, Mr. W. S. M. D'Urban, F.L.S.

They have been nearly all procured from workmen on the London and South Western Railway, and there can be no doubt that they were found among the gravel with which the line for some miles in the neighbourhood of Chard is ballasted.

The material of which they are made is not chalk-flint but chert, in all probability derived from the Blackdown Beds. In form they closely resemble the ordinary types from the valley of the Somme and other well-known Palæolithic deposits, but the prevailing type is a somewhat flat ovoid. There are a few of the pointed spear-head form, but these are not so abundant.

This may perhaps be connected with the difficulty of working chert into form, it being of a less tractable nature than chalk-flint. Among chalk-flint instruments, however, the sharply pointed forms are considerably rarer than those in which the point is rounded. Several of this variety of implements are obliquely truncated at the base, and on one of them a fragment of fossilwood is adherent. There is one specimen of what has been called the perch-backed type. Some of the specimens are considerably rolled, while others retain their edges and angles as sharp as if recently made.

The gravel in which they were found is all stated to have been obtained from a pit at Broom, in the parish of Hawkechurch, near Axminster, in the county of Devon.

In company with Mr. D'Urban and Mr. H. S. Ellis of Exeter I have visited the spot, which is about a mile and a half from Chard Junction, and three miles from Axminster, the pit being close to the main line, and on its southern side. An enormous amount of gravel has been extracted, and a fine section is still exposed. The pit at the present time is worked at two levels, the section at the upper level being about 40 feet in height and that at the lower level about 8 feet in height. This lower pit is carried down to the level of the water, which is presumably but little above that of the river Axe, which flows by at no great distance. It has not been ascertained how much deeper the gravel extends, nor on what kind of rock it lies. The valley, however, is at this point cut through the lower lias, which is worked for lime, between Broom and Axminster. A nearly north and south line of fault is shown on the map of the Geological Survey as passing about $\frac{3}{4}$ mile south-west of Broom, and possibly there may have been some disturbance of level since the deposit of the gravel.

The section shows that this deposit is roughly bedded with some sandy and marly seams intercalated in which numerous grains of glauconite may be distinguished. I looked in vain for any traces of land or freshwater shells, though perhaps a longer search might be rewarded by their discovery.

There is a fair proportion of large stones in the gravel, but it can hardly be described as being in any places very coarse in character. Still, the very considerable number of large pieces of chert which are in the ballast upon the railway, prove that in some parts of the pit they must have been abundant. Mixed with the pebbles is a large proportion of sandy matrix. The pebbles themselves are for the most part of chert, and sub-angular, the angles of some however being sharp. Besides chert, probably from the Blackdown Beds, I noticed a few chalk-flints, some pebbles of hard chalk, and a few of quartz and clay

slate. It may be observed that the chalk occurs *in situ* at about three miles distance resting on the Blackdown beds, between which and the Lower Lias the marls now crop out.

So far as I am able to ascertain no mammalian remains have as yet been found in the Broom Pit, but the character of the gravel and of the implements will justify us in classing this deposit among the other well-known implementiferous beds of the quaternary age.

The principal points of interest in the discovery are the extension of the area in which palæolithic implements have been found in a westerly direction, and the large accession now made to the number of these implements formed of other materials than flint from the chalk.

It is true that at the time of the publication of my "Ancient Stone Implements" I had already received information from Mr. Stevens of Salisbury of the discovery of two or three chert implements in the neighbourhood of Chard by men employed in the erection of the posts for the telegraph. These are now in the Blackmore Museum. I had also in my own collection a pointed chert implement from the Bournemouth gravels. Since that time I have met with two or three specimens in the same material from the extension of the gravels of the old valley of the Solent in the neighbourhood of Barton. Some other chert implements from the Broom Pit are, I believe, now in the Blackmore Museum; but no such series as that collected by Mr. D'Urban is to be found elsewhere than at Exeter. Such a series proves that, as was the case with the makers of the quartzite implements found in the lateritic beds of Madras and in the valley-deposits of the neighbourhood of Toulouse, the occupants of this country in quaternary times contented themselves with the best silicious rock which came to their hands when chalk flints were scarce, and were able to make from the new material instruments almost identical in form and almost equally serviceable with those of flint.

Although so large a number of specimens has been collected by Mr. D'Urban's exertions, it must not be supposed that these chert implements are abundant in the gravel, or that the South-Western line can be said to be ballasted with them.

We were a party of six when we visited the Broom Pit, and our search there was quite unavailing. An examination of the ballast on the line for about five miles resulted in the discovery of two wide flakes only, and the large but not handsome implement which I now have the honour of exhibiting. Of its artificial formation there can be no doubt, but as to the purpose to which so clumsy and heavy an instrument was applied it seems hardly safe to speculate.

NOTES ON THE ZÁPAROS.* By ALFRED SIMSON.†

THE name Záparo signifies a kind of basket made of double wickerwork of split "bejuco" (Liana), with waterproof leaves between, and a lid of the same material to cover it; used by the Upper Napo and Záparo Indians to keep their clothes or chattels from wet.

The Záparos occupy chiefly the Curarai and its tributaries the Nushinu, Nuganu, Supinu, etc.; the main river Napo in the neighbourhood of Sinchichicta, and the Yasuni.

Their language is unpleasant to the ear, and its sounds are very indistinctly rendered, making it a very difficult, and to a stranger at first an almost impossible, task to define and catch the exact pronunciation of their words, many sounds being, as it were, withheld in the mouth.

Each word of a vocabulary of the language which I have formed, was a labour in itself, and some correctness could only be attained by frequent use with the natives of a word once picked up and understood. Continued questions to these Indians appear to them trivial, and only call forth random and useless answers. As later on it was my good fortune to meet an intelligent person who spoke Spanish, and was a stranger, but who had lived with them and spoken their language from childhood, I was able to revise all my pronunciations.

They have the fame of being the most expert woodsmen and hunters, and are very particular in keeping up their activity and precision in throwing the lance, with which they are most dexterous in offence and defence, guarding themselves with such perfection that almost a shower of spears is warded off by a single individual. They keep up their practise not only in the necessary and frequent use they make of their weapons in hunting, but also in occasional human onslaughts, and in private exercise amongst themselves. Besides the lance, they also use the blow-gun, but as they do not make poison themselves, and are most irregular and needy traders, they are often short of this necessary for their darts, and so have to fall back upon the lance. They are also dexterous fishermen with nets.

Their perceptions of eye and ear are perfectly marvellous, and surpass the Napos considerably. Their knowledge of the woods is also so perfect, that they frequently travel by night in unknown

* All the Indian words and names are to be pronounced as Spanish.

† Read at the meeting of the Institute, November 27th, 1877, but omitted in the last number of the Journal, in consequence of the Author's absence from England.

parts. In seeking game they detect sounds and footmarks where white men can see and hear nothing. At a glance they know the number of animals, and the time they have passed, though the tracks may be on loose leaves nearly all the time! But what to me has appeared the most marvellous in following game with these and other Indians, is that they suddenly stop, and, as if meditating a moment, wave their hand in the direction in which one sees the trail proceeds; then waving it crossways, as the case may be, as if mentally following the animal's course, seem to make up their mind as to the direction taken by the game, and start off away from the track, but only to come upon it again by a shorter cut! This, it must not be thought, is done only upon ground well known to them, but occurs in spots where they have never placed foot before.

Their cat-like motions, the ease with which they in their bare skins and feet make their way scathless through thick, entangled underwood and thorns, and their silence, impress one with the true qualities necessary for successful hunting. To communicate with one another in the wood they generally imitate the whistle of the toucan or partridge.

Very particular in their diet, they will, unless from dire necessity, in most cases not eat any heavy meats, such as tapir and peccary, but confine themselves to birds, monkeys, deer, fish, etc., principally because they argue that the heavier meats make them also unwieldy like the animals who supply the flesh, impeding their agility and unfitting them for the chase. Here we find the belief, common amongst many savages, that they partake of the nature of the animals they devour.

Being efficient hunters, they consume a much greater proportion of animal food than their neighbours the Napos, who stand in respect and fear of them, but despise, or affect to despise them, as infidels, behind their backs, for the Záparos belong to the great division of non-salt eating un-christianized Indians of the Oriental Province of Ecuador, and are branded by the others who are baptized, make regular journeys to Chasúta for salt, and speak Quichua, as "Aúcas," which title seems to signify heathens, savages, barbarians.

When Záparos meet Napos, they never take the least notice of each other, and may stand together for hours without exchanging a word or the compliment of proffering "chicha," which is always practised in meeting "individuals" of their own tribe, however much unknown to them personally.

For their hunting they keep dogs, which although very unsightly, miserable-looking animals, are well up in their duties of tracking and driving game. It is considered on the Napo sufficient recommendation for the good hunting qualities

of a dog, to know that he belongs or has been trained by a Záparo or Piojé, as useless animals are never retained by them, The method they sometimes use for training the dog is somewhat novel: he is taken out hunting, and if found not to have a good scent and naturally to fulfil his duties, he is led home again and receives a dose of tobacco down his throat, and his nose and mouth are then also stuffed full of it until he nearly chokes; this is to clear his scent and sharpen his perceptions. He is then taken out again, probably the next day, with much harsh treatment, and if no improvement is shown, is discarded or completely choked.

Tobacco is amongst all the Indians of the Upper Napo region the sovereign remedy for almost all ailments, and is drunk in large quantities mashed in water.

The Záparos are by no means the apathetic, peaceful race they have sometimes been pictured, probably on account of their wretched and miserable appearance, upon a slight acquaintance by some travellers. When unprovoked, they are, like most wild Indians, very shy and retiring, but are perfectly fearless, and will suffer nobody, either whites or others, to employ force with them. They can only be managed by tact, good treatment, and sometimes simple reasoning, otherwise resenting ill-treatment or an attempt to resort to blows with the worst violence.

At all times they are changeable and unreliable, betraying under different circumstances, and often apparently under the same, in common with so many of their class, all the most opposite traits of character, excepting perhaps servility and stinginess, which I never observed in them. The absence of the former is a characteristic of all the independent Indians of Ecuador, and the latter when absent may, I think, be looked upon as based more strongly upon improvidence and apathy than active generosity.

One of the most prominent traits of this remarkable people is their tendency to, and marked enjoyment in the destruction of life. They are always ready and willing to kill, be it animals or human beings, and delight in such occupation; the only exception I noticed being alligators of the larger kind, to which the Supinu Záparos with whom I travelled, manifested a strong disgust and would not touch, though a smaller species is eaten by them and all the Indians of the Upper Pastassa, Napo and Putumayo. Still, though they would not take part in the sport, they enjoyed seeing the huge reptiles slaughtered far more than some Napos, who on that occasion were present. But an invitation to follow and track out Napo Indians who may have to be searched for by the authorities or missionaries (from whom they themselves, however, accept no authority),

or to enter the territories of any hostile tribes when there might be a prospect of plunder and perhaps violence, is accepted by them with a sort of grim pleasure and agreeable anticipation, manifestations of the mind so difficult to produce and rare to witness in any Indian.

In descending the Napo, the days and nights passed in the territories of the terrible Auhishiris on their side of the river, where other Indians would not have ventured on any consideration, they seemed to be in higher spirits and more contented than at any other time, and lay down to sleep on the sand, without roof and all but naked, each sandwiched between their small fires, with light hearts, after having scraped the points of their lances of "chonta" and bamboo, and stuck them in the sand by their sides.

On a previous occasion some of them were asked if they had any dried human heads like the Jivaros, to which they answered in the negative, adding that if desired they would kill some Nushínus and bring theirs. Of course this was prohibited and the idea strongly discouraged.

The Záparos are very disunited, and wander about in separate hordes, the worst of which is probably that of the Supinu.

These are the terror at times of the Nushínus and Mautás, the former of which, as I was informed, they not long since fell upon, killing many of the men and robbing the women, children and their chattels, the second either for use as servants or for sale.

A boy or girl stolen by them is currently sold to traders for, say, a hatchet, a knife, a couple of yards of coarse lienzo, a few fish-hooks, needles and thread, or any special article they may most stand in need of, the whole value generally not exceeding eight to ten shillings.

The stealing of women is much carried on even amongst themselves. A man runs away with his neighbour's wife, or one of them, and secretes himself in some out of the way spot until he gathers information that she is replaced, when he can again make his appearance, finding the whole difficulty smoothed over. In their matrimonial relations they are, as indeed in the practice of all their customs, very loose—monogamy, polygamy, communism, and promiscuity all apparently existing amongst them. Entirely contrary to other neighbouring tribes, they are not at all jealous, but allow the women great liberty, and frequently change their wives in the manner above-named, or by simply discarding them, when they are perhaps taken up by another. Of course all the hardest work is done by the women.

Courtship is sometimes carried on in a novel manner. The matrimonially-inclined swain goes into the woods and hunts.

On his return his sport is thrown at the feet of his elect, and immediately afterwards sufficient firewood for cooking the same. Should she rise and employ herself in cooking his game, and they are seldom backward in taking plain hints in this direction, he may consider himself an accepted suitor, but should she disdain his offer, he may yet find consolation in the shape of some other squaw who may step forward more charitably, and take upon herself the culinary and other consequent duties. But matrimonial engagements are not always made in this way, for, as already stated, women are frequently taken possession of by force, and though they, sweet inconsistencies, may sometimes object, they do so all the time *consenting*, and making no virtual difficulties.

Their disposition is, when nothing special occurs to annoy them, happy, and when they are together at their meals, and one has gained their confidence, chat and laugh a great deal, which latter our Záparos did with us upon the smallest incitation, maintaining though, at the same time, some shyness when in direct and immediate contact with us.

Like all ignorant savages, they are very superstitious, and this forms the base of almost all their disagreements and quarrels. For instance, if one of them dies or falls ill from natural causes, his death or illness is almost sure to be attributed to sorceries exercised upon his person by some secret or open enemy, and his friends often take revenge accordingly. Of course the man held in most awe is the medecine man or "shimáno," as he is called, who is more clever than the others in maintaining the idea of his capabilities to exercise sorceries and cures, and in consequence the others are afraid of incurring his evil influences, and fear to do him harm, all of which strengthens his own opinion of his powers. Any illness or pain is frequently attributed to an enemy having stuck invisible darts into the sufferer, and the medecine man will then be resorted to, and he extracts them from the patient's body by suction with the mouth, and exhibits them just as the clumsiest conjuror might do with us, having previously concealed them in his mouth or about his person. Even the "shimáno" himself, I firmly believe, does not think or know himself to be in reality an impostor; his mind is so low that he entertains a kind of superstitious belief in his own shallow, deceptive practices, if indeed he has any belief on the subject at all, which seems to me very doubtful.

The Záparos believe in a devil or evil spirit, which haunts the woods, and call him "Zamáro," but whether they also believe in a good spirit or creator, I could not ascertain. In all probability they entertain the usual Indian idea in these parts, of trans-

migration or metamorphosis: the valiant men into tigers or jaguars, and the pretty women into beautifully-plumaged birds; others into the animals most akin to their own characters; the jaguar and beautiful birds, however, always occupying the highest and most desired positions after dissolution of their human form.

When a mother having a very young child dies, the child is sometimes buried with her alive, as in a case brought to my notice.

A man labouring under chronic disease, and showing after a long period of time no signs of amelioration or getting about again, is not unfrequently throttled by his friends, after their having held a consultation declaring him to have become a useless member of society and a burden to his family.

The Supínus are in great fear of a single Jívaro who has sometimes appeared amongst them, as always usual by night, for the purpose of robbery. They do not dare to avenge themselves upon him, apprehending that if they were to do so, the Canelos and other Jívaros might call them to account for it, by falling upon them. Many of them, otherwise fearless, once appeared at Aguano, fleeing from the "little one" as their Jívaro enemy is called.

Their industry is very low, and they are consequently very poor and almost nude; in their homes entirely so, as also when hunting at all times, excepting a single thin string girt around their loins. Hammocks, game bags, and "llanchamas" are their only productions.

Like the Piojés, they are addicted to drinking "ayahuásca," though not "yoco," in place of which they chew "guayúsa," a leaf with properties similar to the well-known "coca." The first produces the most intense excitement, and not unfrequently leads them into quarrels and violent broils, ending in extreme exhaustion and depression.

They have several distinct denominations for different stars, but in what their distinctions consist, I could not make out. Time is always indicated by showing the height of the sun, or the moon's rising.

The seven Záparos selected to perform the journey with us from the Upper Napo to the Marañón, were all summoned into our dwelling to receive their payment. The two chief ones destined to steer our two larger canoes, *i.e.*, the one who had brought all of them to us, rejoicing under the name of "Siso" (mange), and the medicine man, or "shimáno," called "Cúri" (gold), received thirty varas of lienzo each; "Rúmi" (stone), "Atiójo" (mosquito), and one whose real name they would never tell us, doubtless on account of its being one they did not

feel proud of, as frequently occurs, twenty-five varas each; and two young ones of probably about seventeen or eighteen years of age, though strapping young fellows, "Ushámi" (large eyed), and "Ashinájá" (pium fly), twenty varas each.

If we had given them each considerably less it would have been just the same, for such a quantity of cloth they had never before received at one time, and its length went utterly beyond their powers of calculation. They all stood huddled together, very shy, and as villainous looking a set as I ever beheld.

Siso was bald, squinted, and his skin blotched with black and scaly, the result of a skin disease common to all Indians of the higher Marañón, called "caráte." The "shimáno," his brother, was even worse looking, having a stronger squint, his long hair all matted over his head and face, and a halting gait, as on their journey from the Supínu he had been wounded by a skait on one foot. Rúmi was a tall finely-made man, but could never divest himself of a cut-throat expression of countenance, and eyes which always avoided straightforwardness in direction and expression. To the "No name," although of quite different physique, the same description would apply, though he betrayed more of the Mephistopheles, whilst the former developed more of the Bill Sykes cut.

Atiogo, Ashinájá (Rúmi's brother), and Ushámi, the three younger ones, were not so bad as the others, but were far from being Apollos, or even as good looking as the average of Napo Indians. Siso and Rúmi had five wives, two each, and one in common. All of them were almost naked, their faces hideously painted in the most diversified manner, and without any regard to symmetry, some simply smeared all over with bright red, others with bluish-black; the women in scanty, miserable rags, and the children "en cuero." Altogether, they seemed to care less for ornamentation of their person than any other Indians I had seen, only one of them having a necklace of monkey's teeth. And these were to be our travelling companions!

The force of habit is great, for after enjoying their companionship for a few days, notwithstanding some trouble they caused us, we soon got accustomed to their evil looks, and by the time our journey was ended, I felt quite sorry to leave them, and would gladly see these poor miserable and murderous savages again; for murderous they are, being the identical ones who had made the onslaught already spoken of upon another horde of their tribe for the sake of robbery and violence.

Each of our chosen guides was called forward to hold the stick upon which his "lienzo" was measured out to him, and the varas were counted out; Nucúaqui, 1; Anamishiñáqui, 2; Aimucuraqué, 3; Manucuaquicajuótsa, 4; Manucúaqui, 5; and

Mánunu, Mánunu (many, many). All above five is simply expressed by "Mánunu," for few Záparos grasped the number expressed by the exhibition of both hands, and still less hands and feet.

As each one received his payment, as if in wonder when we were going to stop such interminable counting, with the addition of a common hatchet, he slunk behind the rest to see the same performance gone through with his companions, and I am quite convinced that none of them ever knew that some had received more than others.

This ordeal completed, a woman of their horde, with whom I was well acquainted, gave them a most energetic exhortation, in which she told them that they must treat us and her son-in-law, who was to accompany us also, well, and on no account abandon us on the way, or in anywise fail to look after our welfare and safety on the journey, for, she threatened them, if they did not behave well and bring him safely back, they need never come to her again for lienzo, knives, poison, or any other necessity.

She spoke with great vehemence, and they evidently listened to her with attention and respect, appearing like school-boys under a severe rating for misconduct. She was the most intelligent of their horde, in fact remarkably so, and having married a trader, was often able to assist them and supply their greatest wants. They held her in great consideration, and looked up to her, allowing her great influence over them.

Upon reaching Iquitos on the Marañon, I was anxious to observe their impressions upon their seeing civilized wonders, but was rather disappointed, though I had naturally not expected much enthusiasm to be manifested.

Fine houses, large steamers, iron works, &c., apparently hardly attracted their attention, and caused them no astonishment, but what called forth all the interest they were capable of showing were the cows and horses. They who thought that every animal was familiar to them, had never dreamt of such as these! And when they saw me suddenly approach sitting astride a huge animal, far taller and more formidable-looking than the tapir, who was prancing and plunging, they escaped into the house and shut the door, but could not resist peeping out through the chinks in the greatest excitement I had yet seen them. They were also markedly pleased at a steam band saw; to see wood cut into almost any shape, as if it were quite soft, whilst with their miserable implements the same work was so laborious. The larger and circular saws seemed too much for their comprehension.

All the peculiarities and characteristics noted in the fore-
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going article should not be, and I think this rule probably applicable to the portrayal of the habits of all savages, looked upon as fixed and established customs from which no deviation will be found. Quite the contrary, as certain peculiarities are manifest and occur before some observers, entirely antagonistic or inconsistent ones may be noted by others, and thus doubt may fall upon the reports of all.

But although I will not deny, nay, can even strongly affirm, that many observers are too prone to give the interpretation of their own feelings to social and even many natural phenomena, I would wish it to be borne in mind when savage customs are being treated of, the inconstancy, fickleness, contradictoriness, inconsistency, vagueness, and superstition which pervade the savage's mind and actions.

In the discussion on the above, Mr. M. J. Walhouse, Mr. Blackmore, Mr. Hyde Clarke, Major-General A. Lane Fox, Mr. Distant, and Mr. Hartshorne took part.

DISCUSSION.

MR. WALHOUSE said: Amongst reticences as to names, it may be mentioned that it is considered highly indecorous for a respectable Hindoo woman to pronounce her husband's name. This has often caused much embarrassment in law-courts when a woman has been examined by an European officer, unaware of the scruple, and desired to state who her husband is, she is thrown into great confusion, which the judge often misunderstands, and insists on an answer. A late Chief Justice in the Supreme Court at Madras once desired a woman to name her husband; the witness hesitated, and spoke aside to the interpreter, when the Chief Justice angrily insisted on knowing exactly what she said, the poor Brahman, after several evasions, being hard pressed, at last faltered out, "Please my Lord—she says—my Lord—that your Lordship has got no shame."

MR. BERTRAM F. HARTSHORNE remarked that it was characteristic of some of the people of the South of India to avoid scrupulously the utterance of certain particular names; and he referred to an instance which had come within his own experience of a Tamil man of low caste who had, in the witness-box of a court of justice, persistently denied that he had the slightest knowledge of the name of his own brother—a man with whom he lived. It ultimately transpired from another source that this brother's name was Muniandi, the designation coinciding with that of the "swami," or tutelary deity of the witness himself. It would appear that the reason why such a name should not be openly mentioned was probably somewhat similar to that which is assigned by Herodotus: It was something *οὐχ ὁσιον εἰπεῖν*.

ANNUAL GENERAL MEETING.

JANUARY 29TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The notice convening the meeting was read.

The minutes of the previous anniversary meeting were read and confirmed.

The TREASURER presented his Annual Statement of Receipts and Expenditure for 1877. On resigning his office, at the expiration of the period for which he had undertaken to hold it he congratulated the Institute on their freedom from debt. This result was due to the measures adopted by the Council two years ago, aided by strict economy in the office expenditure. In accordance with the wish expressed by the Auditors, that the total indebtedness of the Institute on the 31st of December should be given annually, Mr. Park Harrison stated that it amounted to £122 8s. To meet this there were, independent of the unsold Stock, Museum, and Library, the cash balances, £106 4s. 10d., and overdue subscriptions of uncertain value, but more than sufficient to cover any liabilities.

Mr. E. W. BRABROOK moved, and Mr. R. B. MARTIN seconded, the adoption of the Report, coupled with a special vote of thanks to the retiring Treasurer.

THE ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.

Statement of Accounts for the Year ending 31st December, 1877.

RECEIPTS.

BALANCE, 1st January, 1877:	£	s.	d.	£	s.	d.
At Bankers, Roberts and Co.	57	8	4			
In hand	1	4	6	58	12	10
SUBSCRIPTIONS:						
Paid to Roberts and Co.	70	7	0			
" for 1878	6	6	0			
" Collector	485	2	5			
" due 1876	60	18	0			
" Compositions	42	0	0			
" In advance	6	6	0			
				670	19	5
ILLUSTRATION FUND:						
Maj.-Gen. A. Lane Fox	5	0	0			
F. G. Hilton Price and J. E. Price	4	0	0			
				9	0	0
SALE OF PUBLICATIONS:						
Messrs. Trübner and Co.:	75	8	0			
Journal, 1876-77						
Messrs. Longmans and Co.:	2	15	10			
Publications of Institute						
Office:	7	0	6			
Journals.....	7	2	0			
Other Publications				92	6	4

PAYMENTS.

RENT, to Michaelmas 1877.....	£	s.	d.	£	s.	d.
PRINTING:						
Journals, Nos. 17 and 18	109	12	0			
" " 19 and 20	120	6	6			
Miscellaneous	21	4	0	251	2	6
LITHOGRAPHY:						
Kell, and West, to December, 1876	38	12	0			
Kell, MacLure, Emslie, &c., to Dec., 1877 ..	69	10	7	108	2	7
PHOTOGRAPHY:						
Edwards.....				8	10	0
SALARIES:						
Clerk	96	9	6			
Collector's Commission	33	5	11	129	15	5
POSTAGE:						
Journals.....	20	12	3			
Letters, Circulars, and Post Cards	14	14	10	35	7	1
ADVERTISEMENTS:						
Street, for 1876	9	11	6			
" to September, 1877	9	4	0	18	15	6
MISCELLANEOUS:						
Binding	6	1	6			
Books and Maps	1	2	6			
Subscriptions to two Congresses	1	0	0			
" London Library	3	0	0			
Stationery, to June 1877	6	3	0			
Furniture	2	13	0			
Receipt and Bill Stamps.....	2	5	5			
Reporting	2	0	0			
Books, Parcels, &c.	2	16	7			
Insurance and various	5	14	8	32	16	8
HOUSEKEEPER:						
Gratuity for 1876.....	15	0	0			
Lights, Assistance, &c.	4	12	9			
Glazier, and Cleaning Windows	1	17	0	21	9	0
CASH BALANCES:						
At Banker's	104	4	1			
In Clerk's hands	2	0	9	106	4	10
				<u>£2890</u>	<u>18</u>	<u>7</u>

We have examined the above Cash Receipts and Payments, and find the same correct.
 CHARLES HARRISON
 (Signed) O. H. M. CARSWORTHLEY.

Mr. B. F. HARTSHORNE and Mr. J. F. COLLINGWOOD were appointed scrutineers of the ballot, which was then declared by the President to be opened.

Mr. E. W. BRABROOK then read the Report of Council, for 1877.

REPORT of COUNCIL of the ANTHROPOLOGICAL INSTITUTE of GREAT BRITAIN and IRELAND for 1877.

The Institute has held fifteen Ordinary Meetings, and one Anniversary Meeting during the year, at which the following communications were read:—

1. On the Admiralty Islands. By H. N. Mosely, Esq., F.R.S.
2. On some Recent Excavations at Cissbury. By J. Park Harrison, Esq., M.A.
3. Report to the Anthropometric Committee on the 2nd Surrey Regiment of Militia. By Col. A. Lane Fox, F.R.S.
4. On the Development of Language. By Henry Sweet, Esq.
5. On the Classification of Arrow-heads. By W. Knowles, Esq.
6. On Primitive Agriculture. By Miss A. W. Buckland.
7. On the Portstewart Find. By W. Knowles, Esq.
8. On Non-Sepulchral Rude Stone Monuments. By M. J. Walhouse, Esq.
9. On the Himalayan Origin of the Magyar. By Hyde Clarke, Esq.
10. On Anglicising and Gallicising of Surnames. By the Rev. Hector McLean.
11. On Scottish Highland Language and People. By the Rev. Hector McLean.
12. On a Kitchen Midden at Ventnor. By H. M. Westropp, Esq.
13. On a Kitchen Midden at Tenby. By E. Laws, Esq.
14. On the Brain-weights of the Chinese and Pelew Islanders. By Dr. Crochley Clapham.
15. On Right-handedness. By — Shaw, Esq.
16. On the Mental Progress of Animals. By — Shaw, Esq.
17. On the Rude Stone Monuments of North Wales. By A. L. Lewis, Esq.
18. On Coincidences in the Celtic and Maori Languages. By the Rev. W. Ross.
19. On the Australian Languages and Customs. By the Rev. A. Mackenzie.
20. On Eskimo Migrations. By Dr. John Rae.
21. On the Earthworks at Portsmouth, Ohio. By Robert B. Holt, Esq.
22. On a Rude Stone Monument in Kent. By A. L. Lewis, Esq.
23. On the Skulls of the Eskimo. By Dr. John Rae.
24. On the Aborigines of Queensland. By Dr. John Beddoe, F.R.S.
25. On the Present State of the Question of the Antiquity of Man. By John Evans, Esq., F.R.S.
26. On the evidence afforded by the Caves of Great Britain as to the Antiquity of Man. By Prof. Boyd Dawkins, F.R.S.
27. On the evidence afforded by the Gravels and Brick Earth. By Prof. T. McK. Hughes, M.A.
28. On the Hyena Bed in the Victoria Cave. By R. H. Tiddeman, Esq., M.A.
29. On Flint Implements from Ballintoy, co. Antrim. By W. J. Knowles, Esq.
30. On the Stewarts Lake and Frazer Lake Indians, and two Legends of the Langley Fort Indians. By Gavin Hamilton, Esq., communicated by Dr. John Rae.

31. On an underground structure in Yorkshire. By J. R. Mortimer, Esq.
 32. On Australia and Oceania. C. H. E. Carmichael, Esq.
 33. On the Spread of the Slaves. Part I. The Croats. By H. H. Howorth, Esq.
 34. On the Castellieri d'Istria. By Capt. R. F. Burton, H.B.M. Consul.
 35. Notes on Socotra. By Capt. F. M. Hunter, F.R.G.S.
 36. Notes on the Záparos. By A. Simson, Esq., F.R.G.S.
 37. On the Characteristics of the Malayo-Polynesians. By the Rev. S. J. Whitmee.
 38. On worked Flints from Egypt. By J. Jukes-Browne, Esq.
 39. On the Galleries of the Cave Pit, Cissbury, and recent Discoveries in its Vicinity. By J. Park Harrison, Esq., M.A.
 40. On reputed poisonous nature of arrows of the South Sea Islanders. By Dr. Messer.

Eighteen Ordinary Members have been elected during the year.

Prof. T. Rupert Jones, F.R.S., has been elected an Honorary Member, Dr. Mayer and Prof. Enrico Giglioli corresponding members.

The Institute has lost through death Viscount Milton, Dr. F. M. Rickard, Mr. Edward Lord, Mr. Walter Bagehot, Mr. James C. Richardson, Mr. W. Somervell, Mr. Robert Dunn, Mr. A. R. Adams, and Mr. Charles Brett; and Mr. Thomas Wright, Hon. Member.

The former and present state of the Institute with regard to the number of Members are shown in the following Table.

	Honorary.	Compounders.	Annual Subscribers.	Total.
January 1st, 1877.	51	95	337	483
Since elected	+1	+1	+17	+19
Since deceased	-1	-3	-5	-9
Since retired			-15	-15
Since compounded ..		+1	-1	0
January 1st, 1878	51	94	333	478

The following are the names of donors to the Library and Museum during the past year.

The Royal Society; The Society of Arts and Sciences, Batavia; the Imperial Academy of Sciences, St. Petersburg; the Editor of Nature; the Editor Revue Scientifique; the Geologists' Association; J. Jeremiah, Esq., Junr.; the Anthropological Society of Berlin; the Editor Matériaux pour l'histoire de l'homme; the Imperial Academy of Sciences of Vienna; the Canadian Institute;

the Royal Historical and Archæological Association of Ireland; James Heywood, Esq., F.R.S.; Commander Cameron, R.N., C.B.; Prof. Virchow; A. L. Lewis, Esq.; the Royal United Service Institution; E. W. Brabrook, Esq.; the Royal Society of Victoria; the Royal Geographical Society; the Society of Antiquaries of London; the Royal Asiatic Society; Prof. F. V. Hayden; Captain Harold Dillon, F.S.A.; the American Association; the Asiatic Society of Bengal; the Anthropological Society of Vienna; A. J. Evans, Esq., F.S.A.; John Evans, Esq., F.R.S.; Dr. J. C. Murray; the Royal Institution of Cornwall; A. R. Grote, Esq.; Hyde Clarke, Esq.; the Asiatic Society of Japan; Baron F. Von Müller; the Imperial Society of Naturalists of Moscow; the Editor Archiv für Anthropologie; Prof. G. Nicolucci; M. Ernest Chantre; Dr. James Fergusson; the Social Science Association; the Royal Academy of Sciences, Amsterdam; the Davenport Academy of Natural Sciences; the Smithsonian Institution; Royal Academy of Copenhagen; Dr. J. Kopernicki; the Austrian Government; the American Philosophical Society; Charles Roberts, Esq.; Dr. Paul Topinard; the Royal Society of Tasmania; Dr. Carlo Graecomini; Dr. H. P. Bowditch; the Manx Society; the Executors of the late Henry Christy, Esq.; W. H. Dall, Esq.; Robert Clarke, Esq.; the Cracow Academy of Sciences; Prof. R. O. Cunningham, M.D.; Col. Henry Yule, C.B.; Prof. Enrico Giglioli; Dr. Paul Broca; Prof. A. Ecker; Capt. R. F. Burton, F.R.G.S.; C. Roberts, Esq.; G. C. Steels, Esq.; the State Board of Health, Massachusetts; the American Medical Association; the Berwickshire Naturalists' Field Club; Frederick Young, Esq.; the Royal Colonial Institute; the New Zealand Institute; Mrs. Morgan; F. A. Allen, Esq.; James McClelland, Esq.; the British Association; the Devonshire Association; W. M. F. Petrie, Esq.; Prof. T. Rupert Jones, F.R.S.; Otis T. Mason, Esq.; C. W. Brooks, Esq.; the Royal Geological Society of Ireland; the Record Department, India Office; the Government of India, Home Department; C. D. Wright, Esq.; the Rev. Canon Greenwell, F.R.S.; Prof. G. Rolleston, F.R.S.

Mr. PEACOCK moved, and Mr. J. BONWICK seconded the adoption of the Report. Carried.

The PRESIDENT then delivered his Annual Address.

In accordance with the custom of this Institute, I rise to deliver an anniversary address, which, following the example of several of those who have in former years occupied the Presidential chair, I propose to make rather retrospective than prospective in its character.

With regard to the communications which during the past year have been addressed to the Institute, I think that we may congratulate ourselves that they have not fallen below those of previous years either in number or importance. I may, however, observe that our attention during that period has not been called to many papers which, in the classification of General Lane Fox, would rank under the heading of Comparative Anatomy, Biology and Sociology. Adopting his order of arrangement, I come first to—

DESCRIPTIVE ETHNOLOGY.—Under this head may be classified eight papers:—

1. "Australian Languages and Traditions," by the Rev. C. C. Greenway, Mr. Thomas Honey, Mr. MacDonald, Mr. John Rowley, and others, communicated, through the Colonial Secretary of New South Wales, by Mr. Ridley.

These reports are in continuation of others which have already appeared in our Journal, and contain many details as to the Kamilaroi and Wailwun language and traditions, and those of other parts of Western Australia from Melbourne in the south to Cape York in the north.

The custom of the Bora, or initiation into manhood, is described from personal observation by Mr. Honery, of which also Mr. Macdonald gives some details. One curious feature mentioned by the latter is the construction of a low mound representing a man in the attitude in which the young men are made to lie while awaiting the ordeal of the Bora, 22 feet long, and 12 feet wide from hand to hand. The form of totemism and the limitations on marriage which prevail among the Kamilaroi and other tribes are well known, but I am not sure whether the method of catching turtles by means of a remora or sucking fish with a cord attached, which is in use among the natives at Cape York, has been previously noticed. The traditions with regard to the origin of some of the constellations appear also to be remarkable.

2. "Customs of the Stuart's Lake Indian women, and those of the Fraser Lake tribes and Langley Fort legends," from information supplied by Mr. Gavin Hamilton, communicated by Doctor John Rae. In these papers are given some instances of the seclusion of women at certain periods and of their prohibition from some kinds of food, such as have been observed in other parts of the world. The legends relate to the origin of rivers, lakes, and islands, and of the fur-producing animals.

3. "A Benedictine Missionary's Account of the natives of Australia and Oceania from the Italian of Don Rudesindo

Salvado." This paper, compiled by Mr. Carmichael from the interesting work of Bishop Salvado, must rank under the head of "Descriptive Ethnology." The work was published in 1851, and gives the experience of the Missionaries from Jan. 1846. It is of course impossible within the time at my command to give an abstract of the paper, but among the most curious features may be noticed the religious views of the Australians of New Nursia, such as their ideas of a soul which on the death of the body remains like a bird among the trees, their belief in an Omnipotent Creator, now however dead, and in an author of evil who is always at work, and their neglect to worship the one, or to propitiate the other. Their belief in a great serpent Uocol which lives at the bottom of a deep pool, and will kill any natives that drink from it, may be compared with the serpent-beliefs of other races. Not a little remarkable is the quickness attributed to the youthful Australians in learning letters and languages. Bishop Salvado's observations as to the colour and hair of the Western aborigines of Australia seem rather to militate against the conclusions which he drew from the similarity of language in different parts of the country as to there being but one race; for he states that in Western Australia he never met with more than one native who was black, and that the hair was not woolly, but often smooth and fair, thus bearing out the views of those who believe that representatives of at least two races of men are to be found in Australia.

4. "Notes on Socotra," by Captain F. M. Hunter, R.N. In this paper the author described his observations made in travelling through this little-frequented island, which are to some extent in disaccord with those of a previous explorer, Lieut. Wellstead.

5. "Notes on the Záparos," by Mr. A. Simson. The customs of this tribe of Equador have been carefully studied by the author. The people are highly superstitious, but possessed of extraordinary powers of observation, so far as tracking the enemy or game is concerned. They abstain from certain meats, such as that of tapir and peccary. Their system of courtship,

in which the suitor deposits food near the dwelling of the object of his affections, and learns his acceptance by her taking it up and cooking it, and his rejection by its being left untouched, commends itself for simplicity.

6. "Characteristics of the Malayo-Polynesians," by the Rev. S. J. Whitmee. Some curious observations are here made as to the superior position of the women of the Samoan group as compared with that of the women of the black Polynesians. Rank and title are in some cases hereditary among the former, and the author inclines to the opinion that this denotes a descent from a former higher state of culture. His remarks as to the difficulty of obtaining correct versions of native myths and poems are well deserving of attention.

7. "On the Andamanese and Nicobarese," by General A. Lane Fox and Mr. E. Man. This paper was in illustration of a remarkable collection of objects manufactured and used by these people. I am sorry not to be able on the present occasion to do more than mention its title.

8. "Ethnology of the Motu, New Guinea," by the Rev. W. Y. Turner, M.D. The great interest of this paper consists in the sketch it gives of the condition to which a people still in the Stone Age may attain. Although devoid of metal, various industries are pursued and even localized, pottery, for instance, being made at one village or settlement, armlets at another, and canoes at another. Barter is carried on to a great extent, clothing and even food being imported. Polygamy is not practised, and there is property in plantations. Though clothing is of the scantiest, ornaments are freely used, and an armlet of shell also serves as a pocket. Though there is some belief in a future state, nothing appears to be buried with the dead for use in a future state of existence; and though the widow is for a time compelled to live in a hut close to or over her deceased husband, in a few years no trace of the grave remains. In some respects their customs are almost European. Black is the colour of mourning. Like the Jews of Poland and other countries the married women shave off their hair, and a

neighbouring tribe, the women of which wear a girdle or fringe somewhat open at the sides, are reproached, like the Spartan women of old, as *φαυρομήριδες*, or thigh-shewers. The Motu are regarded by Dr. Turner as Malay rather than Papuans, but there appear to be other races, such as the Koiari and Koiatapu, in the same district. The custom prevailing in New Guinea of building pile-dwellings, much like those of the Swiss lake settlements, has already been frequently noticed.

• *ARCHÆOLOGY.—Seventeen Papers.*

1. "On the Classification of Arrowheads," by Mr. W. J. Knowles. In this paper, the author suggests the adoption of the terms, "Stemmed, Indented, Triangular, Ovate, Lanceolate, Kite-shaped, and Lozenge-shaped," as better adapted to express the various forms of stone arrowheads, than the terms suggested by Sir William Wilde, Sir John Lubbock, General A. Lane Fox, or myself; or he would admit the term leaf-shaped as comprising the ovate and the lanceolate varieties. Without myself accepting all Mr. Knowles's conclusions as universally applicable, I think that the term "indented," is one which will be found of service, especially in describing a prevailing type of Irish arrowheads.

2. "Additional remarks on the Find of Prehistoric Objects at Portstewart," by Mr. J. W. Knowles. This paper is supplementary to one which was read at the meeting of the British Association at Belfast, giving an account of a large number of stone implements and bones, in the sand-hills, near the shore at Londonderry. Among the objects found is one of the so-called oval tool-stones, which the author regards as being of the same age as the flint implements found at Portstewart and in the country adjoining, and as having been used in their manufacture. He can hardly have been aware that the same class of tool-stones is found in Scandinavia, often associated with iron weapons and tools, as for instance in the Thorsbjerg Moss Find.

3. "On Non-Sepulchral Rude Stone Monuments," by Mr. M. J. Walhouse. In this paper the author, from his own experience in India, brings numerous facts together which are well calculated to throw light on the possible origin and meaning of monuments in other countries, and of far earlier date. The piling up of cairns, commemorative of mortal accidents, and to which each passing traveller contributes a stone; the formation of alignments and enclosures marked by large blocks of stone; the erection of standing stones, and even of trilithons; and the construction of dolmens or cromlechs are all in practice at the present day. Many of these latter megalithic structures are open on one side and are in use as a kind of rock-temple, in which, curiously enough, polished stone celts are often among the sacred objects deposited. Although these open-sided structures are free-standing and non-sepulchral, some of them are sculptured inside with figures commemorative of widow immolation, and it is the custom of certain tribes to deposit a long waterworn pebble in the dolmen on the occasion of a death. Such a custom may be significant of the modern form of temple being in some sense a derivative from an earlier form of sepulchral monument. The latter part of this paper is devoted to notices of stone-worship, a practice which appears to have prevailed from the earliest times unto the present day. It seems to me not improbable, that in some instances, the stones thus venerated may have been of meteoric origin. The universal prevalence of this custom, which has been largely insisted upon by Sir John Lubbock and Mr. E. B. Tylor, is very remarkable. To use the words of the latter,* "We may still say with Tacitus, describing the conical pillar which stood instead of an image to represent the Paphian Venus, 'et ratio in obscuro.'" Curiously enough, there now exists, near the site of Catalima in Cyprus,† a pointed stone, still 6 feet 7 inches above the ground, and with a small hole, about 9 inches by 5 inches through the centre, in which the young girls of the village deposit their glass jewellery,

* *Prim. Cult.*, vol. ii, p. 152.

† *Di Cesnola*, "Cyprus," p. 188.

when they break it either when they are married or betrayed by their lovers; while the older women resort to the monolith and offer votive tapers, in the hope of being cured of bodily ailments.

4. "On a Kitchen-Midden at Ventnor," by Mr. Hodder M. Westropp. Strictly speaking, this paper contained a notice of two kitchen-middens, if not more, one of which, like that in the Island of Herm, explored by the late Mr. J. W. Flower, is of Roman or post-Roman date. The most remarkable object found is a small urn, which is described as ornamented with a band of coralline seaweed around it. I have not seen it, but from a fragment of another vessel shown me by Mr. Westropp, I am doubtful whether the presumed coralline does not consist merely of the branching lines of adhesion of the wetted surface of the clay to the hand or some smooth tissue.

5. "On a Kitchen-Midden found in a Cave, near Tenby, Pembrokeshire, and explored by Mr. Wilmot Power," by Mr. Edward Laws. In this cave of Little Hoyle or Longbury Bank, were found confusedly mixed together, bones of ox, goat, sheep (?), horse, dog, swine, and roebuck, and shells of oyster, limpet, mussel, cockle, whelk, and periwinkle; together with a bone needle and some other stone and bone implements and pottery. In this "hotch-potch," as the author terms it, were portions of the remains of at least six human beings, one of whom, at all events, was dolichocephalic. The author suggests that we have here an instance of cannibalism, and that the cave may possibly have been occupied by Iberian allophylians. The cave, however, is without stalagmite, and appears to have been occupied in historic times, as Roman pottery, as well as coarser ware turned on wheel were found in it. I must confess, that it appears to me a case in which great caution must be exercised in drawing conclusions.

6. "On some Rude Stone Monuments of North Wales," by Mr. A. L. Lewis. This paper contains descriptions of the dolmen in the park of Plas Newydd, a small dolmen on the top of the Great Orme's Head, a chambered monument at Tyn-y-coed

Farm, near Bettws-y-coed, a standing stone near Aber, and a circle called Y-Meinen-Hirion. The principal point insisted on by the author is the presence, in connection with this circle, of a large outlying stone towards the north-east, which he regards as pointing out the direction in which the sun first appears above the horizon at midsummer. In this he finds further support of the views he has advocated on former occasions, the presence of such outlying stones having been observed not only at Stonehenge and the Roll-rich, but in connection with other circles of this character.

7. "The Earthworks of Portsmouth, Ohio," by Mr. R. B. Holt. These are stated to consist of extensive terraces, enormous mounds and ditches, long lines of parallel embankments, and models of animals on a gigantic scale. With regard to the terraces, however, which rise in one instance 19 feet, and in another 37 feet, above those below them, it is a great question with me whether they are in any way of human origin. They appear to me to be rather river terraces such as are well known to geologists, and to mark the level of former floods of the Ohio and Scioto Rivers. The earthworks are remarkable and on a large scale; a large "temple," consisting of three concentric circles, the outer one of which is 640 feet in diameter. In the centre is a mound, rising 45 feet above the surrounding surface. The skulls from small mounds in the neighbourhood are always brachycephalic, while others, from places where the interments appear to have been made with less ceremony, are dolichocephalic. It is suggested that they testify to the presence of two races, the one dominant and the other servile. However this may be, the remains of ironworks seem to require further investigation, and curious matter for speculation is afforded by the large sheets of mica deposited in piles as if for use, which have been brought to light by excavations.

8. "On a Rude Stone Monument in Kent," by Mr. A. L. Lewis. This is situated about a mile and a half from Snodland Station, at a place called Coldrum Lodge. There appears to be there the remains of a sepulchral chamber, formed of two stones,

9 or 10 feet long, and 5 to 7 feet high, as well as a portion of what may have been an oval of stones of smaller size.

Of the three next papers belonging to this class I shall speak presently, as they in fact formed the basis of our discussion on the antiquity of man. They were as follows:—

9. "On the Evidence afforded by the Caves of Great Britain as to the Antiquity of Man," by Professor W. Boyd Dawkins.

10. "On the evidence afforded by the Gravels and Brick-earths," by Professor T. McKenny Hughes.

11. "On the Age of the Hyæna Bed at the Victoria Cave, Settle, and its bearing on the Antiquity of Man," by Mr. R. H. Tiddeman.

12. "Flint Implements and Associated Remains found near Ballintoy, co. Antrim," by Mr. W. J. Knowles. Like those from Port Stewart, these objects were found near the sea-shore, but in this case there appears to have some traces of habitations, and possibly old floors. Scrapers were numerous, and a kind of chopper is also mentioned. In the wall of one of these dwelling-places a so-called tool-stone was found, which the author regards as belonging to the Stone Age. As I have already observed, there can be no doubt of the analogous form in Denmark belonging to the Early Iron Age. I can see no reason for assigning an earlier date to the Irish specimens, but if in this instance the tool-stone and the scrapers could be proved to be contemporaneous, I should more readily accept the scrapers as belonging to the age of iron than I should the tool-stone as belonging to that of stone. As I have elsewhere observed, I have myself bought flints trimmed to the scraper form, but in use at the present day for striking a light. I have indeed figured an example.*

13. "On an Underground Structure at Driffield, Yorkshire," by Mr. J. R. Mortimer. This paper relates to a flue-like cavity, walled and covered over with slabs of chalk, and bearing strong evidence of having been exposed to the action of fire. A similar

* Ancient Stone Implements, fig. 222.

structure is mentioned as having been found near Beverley. Their contents prove them to be of Roman date, but their use is uncertain. The author regards them as of the nature of hypocausts.

14. "Flint Implements from Egypt," by Mr. A. Jukes Browne. The objects described are for the most part flakes, trimmed or worn at the sides or ends, and some arrow-heads of a long pointed form and not chisel-ended like the ordinary Egyptian type of arrow-head. Different forms of instruments seem to prevail at different places in the neighbourhood of Helwan, which the author regards as indicative of separate manufactures having existed for producing different classes of instruments. It is, however, a question whether the implements themselves are not merely such as have been worn out or lost, and if so, their differences in character would be merely significant of flint having been used in the working of different materials or shapes, at the different places where these objects are found.

15. "On the Galleries in the Cave Pit, Cissbury, and recent discoveries in its vicinity," by Mr. J. Park Harrison. With regard to the pits themselves, the author thinks that though excavated for the purpose of obtaining flint, some remained in subsequent use as refuges or storehouses. In the neighbourhood of the deep shafts which have been so often described, he found several shallow pits containing animal bones, pottery, a weaving comb, an iron pruning hook, and other objects, probably of late Roman or post-Roman date. These pits Mr. Park Harrison regards as sepulchral, but on this subject there is a great diversity of opinion.

16. "On the discovery of Palæolithic Implements in the Valley of the Axe." In this short paper I place on record the discovery of a number of instruments of chert, in a gravel-pit near Chard, which have for the most part been obtained through the efforts of Mr. D'Urban, of the Albert Memorial Museum, Exeter, though some isolated specimens have been found farther to the west. This is the first instance of Palæolithic implements having been found in numbers west of Bournemouth.

17. "*More Castellieri*," by Captain Richard Burton. In this somewhat digressive paper a lively topographical account is given of the Istrian Peninsula, with notices of its various antiquities, and especially the Castellieri, of some of which the same author has given details in a previous communication.

The papers to be classed under the head of

ETHNOLOGY

have not been numerous. They consist of the following five papers:—

1. "*Eskimo Migrations*," by Dr. John Rae. In controverting the opinion that the Arctic Highlanders of the north-west of Greenland reached that place without touching the American continent, the author points out that the Eskimos are a people always ready to adapt themselves to circumstances, and that whether their huts were built of stone, wood, or snow, whether they burn wood or oil for heating purposes; whether they use harpoons and lances, or bows and arrows, and whether they use large luggage boats or sealskin sledges—are questions not of race but of geographical surroundings.

2. "*On the Aborigines of Central Queensland*," by Dr. Beddoe. This paper mainly consists of materials gathered on the spot by Mr. Robert Christison, whose experience is calculated to give a far better character to these aborigines than that which is usually assigned to them. Many are of good stature and possessed of good muscular development, even of the legs. Their spears, tomahawks, waddies, and other weapons, are much like those used in other parts of Australia, and they are very skilful in the use of the boomerang.

3. "*On the Ethnology of Germany. The Migrations of the Saxons*."

4. "*On the SPREAD of the SLAVS*." Part I, the CROATS.

In the first series of these valuable papers, of which it is beyond my power to give an abstract, Mr. Howorth continues his detailed account of the early history of the Saxons—a subject

in which we as Englishmen are especially interested. While in the second he enters into a similar investigation with regard to the Croats, towards whom, as well as towards other Slav races, recent events have done much to direct attention.

COMPARATIVE ANATOMY.—*Three papers.*

1. "On the Brain-weights of some Chinese and Pelew Islanders," by Dr. Crochley Clapham. After pointing out the truth of Wagner's conclusion that superiority of size of brain cannot be regarded as a constant accompaniment of superiority of intellect, the author cites his own experience of the brain-weight in 716 cases of insanity in which he found the average weight for males to be 48·149 oz. avoirdupois, and for females, 43·872, or higher than those deduced by Dr. Robert Boyd from an examination of 2,086 sane brains. In the case of 16 brains belonging to the "Coolie," or lowest grade of Chinese society, the weights were, male 50·45 oz. and female 45·45 oz., while of 4 male Pelew Islanders, fishermen, the weight was 49·375 oz. This remarkable excess in weight seems to be balanced by a marked deficiency in the number and depth of the secondary convolutions of the brain, and a want of depth in the grey matter. There is also an almost simian symmetry of the two hemispheres. The skulls of the Pelew Islanders were remarkably dolichocephalic. The author was inclined to connect the large size of the brain with its being essentially musculo-motor in function.

2. "On Right-handedness," by Mr. Shaw. This paper contains rather a collection of some few facts in connection with right- and left-handedness than any attempt to explain the phenomena. Left-handedness appears to follow such arbitrary rules, even in the same family, that it appears to me possible, I will not say probable, that like some deformations of the skull it may be connected with the manner in which the child has been principally carried during infancy, and that this again may be connected with the use by the mother of one breast in preference to the other.

As has already been pointed out by others, the more direct supply of blood to the one side than to the other may also have much to do with the question.

3. "On Eskimo Skulls," by Dr. John Rae. Dr. Rae calls attention to the marked difference between the skulls of the Eskimos near Behring's Strait and of those inhabiting Greenland, the former being brachycephalic and the latter dolichocephalic, while the natives of the intermediate coast from the Coppermine River eastward have mesocephalic skulls. He suggests as a cause for this difference the probable intermixture of the Eskimo race with the North American Indians on the one hand and Danish settlers on the other, and expresses an opinion that the pure Eskimo type is to be found between the Coppermine River and the shores of Hudson's Bay.

BIOLOGY.—*Two Papers.*

1. "On the Mental Progress of Animals during the Human Period," by Mr. Shaw. This paper, though short, is extremely suggestive and opens out a line of thought which may profitably be pursued by all who are interested in tracing the interdependence of the different forms of life at any period. In connection with this subject, I venture to call the attention of English observers to the work of Mr. J. C. Houzeau,* "*Études sur les Facultés Mentales des animaux comparées à celles de l'Homme, par un Voyageur naturaliste,*" which, though not tracing the influence that the appearance of man has had on the lower animals, will be found to contain much valuable information on the mental powers of animals and the early condition of the human race.

2. "An inquiry into the reputed Poisonous Nature of the Arrows of the South Sea Islanders," by Dr. Messer, R.N. The author is led to doubt the potency of the poisons used on these arrows, and seems inclined to attribute their fatal effect in producing a disease identical with traumatic tetanus more to morbid mental

* Mores, 1872, 2 vols; 8vo.

disturbance than to active poison. Analysis by Professor Busk failed to detect any tetanizing ingredient on an arrow from Malluolo, but it has been suggested that what after some months is harmless, may originally have been deadly. If the virus is derived from long contact with a putrid human body, it may well at first be deadly, but in that case it is remarkable that the symptoms should differ so materially from those of blood-poisoning.

PHILOLOGY.—*Four Papers.*

1. "Himalayan Origin and Connection of the Magyar and Ugrian," by Mr. Hyde Clarke. In this paper the author attempts to establish the relation of the languages of the Ugrian order with those of the Himalayan group, especially those of East Nepaul, and would extend the influence of a Himalayan centre into Africa. He points out that among the tribes of Nepaul are to be counted the Magar, and gives examples of affinities between common words in Magar and Magyar. According to Mr. Solymos, who took part in the discussion of the paper, the Hungarian Magyar tradition is that their ancestors came across the Ural from Asia.

2. "The Scottish Highland Language and People," by the Rev. Hector Maclean. Mr. Maclean disputes the propriety of dividing the ancient Continental Kelts into two branches, the one Gadhelic and the other Kimric. He thinks that if some of the Keltic dialects of the east and south-east of Scotland could be recovered, the two branches of Kimric and Gaelic Kelts would be found to be but the extremes of one great continuous people. The Caledonii of Tacitus he considers to be a different people from those of subsequent writers, and regards the Scottish Highlanders of the present day as a commixture of several races.

3. "Curious Coincidences in the Celtic and Maori Vocabulary," by the Rev. W. Ross. This short paper adduces a number of coincidences between two languages geographically so wide apart, not as any proof of affinity between them, but rather as suggestive that many languages and families still carry with

them some of the characteristics of a prehistoric and primeval speech, the common patrimony of the human race.

4. "On the Anglicizing and Gallicizing of Surnames," by the Rev. Hector Maclean.

SOCIOLOGY.—*One Paper.*

"Primitive Agriculture," by Miss A. W. Buckland. This paper contains many useful facts and interesting speculations, both as to the origin of the various cereals and other plants cultivated for food, and the means and instruments used for their cultivation. Perhaps the most important part is that which is devoted to the history of the cultivation of maize. The author observes, that if archæologists will look with unprejudiced eyes, they will yet find representations of this plant among the sculptures of Egypt and Greece. Curiously enough Leake in his "Numismata Hellenica," doubtfully describes a coin of Pæstum as bearing upon it a branch of maize; but on the other hand, Hieronymus Bock, writing in 1539, mentions the great Welsch-korn, foreign corn or maize, among the newly imported grain which rendered Germany an *Arabia felix*. Moreover, the symbol on the coin of Pæstum is certainly not maize. I may just mention, for the sake of those who are not already acquainted with the book, that a mass of valuable information with regard to the origin of cultivated plants and trees and of domesticated animals will be found in Victor Hehn's work, "Kulturpflanzen und Haustihere."*

Such is a necessarily short and imperfect account of most of the forty papers which, during the last year, have been communicated to us. As has not unfrequently been the case before, the Archæological papers have been the most numerous; but I hope this will not be attributed to any presumed archæological proclivities on the part of your President. I must again repeat, that though this Institute is ready to receive any communications bearing on the history and progress of the human race, yet that

* "Hehn, Kulturpflanzen, &c.," p. 438, 8vo, Berlin, 1874.

papers bearing more directly on his moral and physical condition are better adapted for discussion at its meetings than Archaeological essays, such as might with propriety be addressed to some of our Archæological Societies.

Our meetings have been fairly well attended, but perhaps the most important was that already mentioned, which was devoted to the discussion of the present condition of the question as to the Antiquity of Man, and at which the three papers already enumerated were read by Professor Boyd Dawkins, Professor Hughes, and Mr. Tiddeman. It was of course impossible within the limits of a single evening to do full justice to the subject, but the manner in which it was approached by treating of the evidence afforded by the caves, and the gravels and brick-earths of this country was perhaps the best that could have been adopted, and so far as Britain is concerned, enabled those who took part in the discussion to bring their views forward in a comprehensive manner. The question as to the time involved in the changes in the fauna and the configuration of the surface since the Palæolithic period, may be discussed with quite as great advantage from a purely English point of view, as from one embracing a larger area; and to some extent this will hold good with regard to the question which has been raised whether the palæolithic implements of the river-gravels may not be referred to an inter-glacial period. On this point the evidence, to my mind, is conclusive that many of the beds containing the implements are posterior in date to the middle glacial sands and gravels, and the chalky boulder clay of the east of England as defined by Mr. Searles Wood, Jun.; though I am ready to admit that it is still an open question whether some of the glacial deposits of the north of England and of Scotland may not possibly belong to a more recent period or even synchronize with the palæolithic implement-bearing beds of the south and east of England. As to the relics of human workmanship, thought to have been discovered in beds of Pliocene and even Miocene Age in Italy, Switzerland, and France, I must again

on the present occasion repeat the words of caution which I ventured to address to you in May last. In Italy, I think that there are not a few naturalists who agree with me in regarding the incisions on the fossil bones of whale from the neighbourhood of Sienna, as being the work of some other than human agency, and with regard to the Wetzikon staves, I have heard an opinion expressed by a competent observer who had the opportunity of examining them, that they might after all turn out to be the knots or bases of branches from a stem of fir, the rest of which had more readily decayed than these parts which are so highly charged with turpentine. But while strongly insisting on the necessity of caution in accepting evidence, I cannot do otherwise than again express my belief that we shall eventually find traces of man of earlier date than that which can be assigned either to the caves or river gravels of Western Europe. It is I think rather in the sunny lands of the east and south, than in the more temperate west or colder north, that these traces will be discovered, and I hope that Indian geologists will ere long solve in a satisfactory manner the date and origin of the so-called laterite deposits of Madras. Farther east in Borneo there appears a chance of some cave explorations being carried on which may possibly throw some light on the date of man's appearance in that part of the globe. Mr. Everett, whose name as a naturalist is well known, and who has already carried on some cave explorations in Borneo, has expressed his willingness to devote a year to further researches, provided the necessary funds are forthcoming, and I am now in correspondence with him, giving him the guarantee that his expenses will be met. The Royal Society has already voted a sum in aid of the research, and I must venture to appeal to all those who are interested either in the early history of man, or in palæontology, to assist me in raising the by no means inconsiderable amount for which I have made myself responsible. I will only add under this head that any proceeds from the cave explorations will be placed at the disposal of the British Museum, and the duplicates not required for that institution, at the disposal of a committee.

I have already said enough and more than enough as to the proceedings of our Institute during the last year. I must now add a few words with regard to some of the books having a more or less direct bearing upon our science, which have appeared in this country within the same period.

First among these, I must place Canon Greenwell's long-expected work on British Barrows. In it he gives an account of no less than 234 tumuli of different kinds, which have been opened under his immediate superintendence, in different parts of England, for the most part in Yorkshire.

Of each of these, full details are given, while the introduction consists of a valuable essay on the nature and characteristics of the different forms of sepulchral mounds, the various methods of interment, and the implements, arms, ornaments, and pottery found in the graves. It would be out of place here to enter into details, but I hope that many of my hearers are already in possession of the book, the value of which is enhanced to anthropologists by the careful description of the figures of thirteen of the skulls, from the pen of Professor Rolleston, who has appended instructive essays on the series of prehistoric crania, and on the flora and fauna of neolithic times.

The splendidly illustrated work of Dr. Schliemann, giving the results of his excavations at Mycenæ and Tiryns, must also not be passed over in silence. The light thrown by these explorations on the early civilization of Greece and its funeral customs can hardly as yet be fully appreciated, but taken in conjunction with the "Trojan discoveries" of the same enthusiastic explorer, and with those of Di Cesnola in Cyprus, they open up a new chapter in the history of the progress of the human race. The actual anthropological details given by Dr. Schliemann are scanty, but the bones from the tombs of Mycenæ are preserved in the National Museum at Athens, and will no doubt be the subject of future examination. I must express a hope that some more "faithful likeness" of the "tolerably well-preserved" head from the first sepulchre will be given than that in Fig. 454, in which the "thirty-two beautiful teeth," described in the text,

are shown as of uniform size, and all crowded into about three-quarters of the jaws.

Some of the skulls exhumed by General di Cesnola are deposited in the Anthropological Museum at Turin. His book vies with that of Schliemann in the number and beauty of its illustrations, though, for the most part, his discoveries may be referred to a somewhat later period. Regarded from a philological point of view, the discovery of numerous Cypriote inscriptions, and the key, which, thanks to the late Mr. George Smith, Dr. Samuel Birch, and the late Dr. Brandis, we now possess to the remarkable syllabic Cypriote alphabet, seem likely to bear important fruits.

FOLK-LORE SOCIETY.

Another event which will be of some interest to this Institute is the formation of a Folk-Lore Society, intended to preserve some record of our popular fictions and traditions, our superstitions, and ancient customs. The intention of its founders is that it should also extend the field of its labours to the folk-lore of the Continent of Europe and of Aboriginal races. While deprecating the foundation of too large a number of societies, I hope that it will prove that this new institution will find a field for its labours, which has to a great extent been hitherto unappropriated, and that its researches, so far from interfering with those of this Institute, may afford assistance to such of its members as are more particularly interested in this phase of our pursuit.

ANTHROPOLOGICAL EXHIBITION.

There is only one subject more which I need mention, and that has to do with the future, rather than with the past, I mean the approaching exhibition in connection with anthropological science, at Paris. With such names as De Quatrefages, Broca, De Mortillet, Topinard, and Hovelacque, upon its organising committee, we cannot doubt of its success; and I hope that

anthropologists in this country will co-operate to the best of their ability with our friends on the other side of the Channel, and bear in mind that of all the nations of Europe, there is none which has entered more heartily into anthropological studies, or done more to advance their progress, than France.

I have only now to express a hope that, during the year on which we are now entering, our Institute may continue to prosper, the number of its members to grow, and the interest felt by the educated public in all anthropological and ethnological subjects to increase; and to offer my thanks to the Officers and Council of the Institute for their cordial co-operation with me during the past year, and to the members generally, for the consideration they have shown me since I have had the honour of occupying your presidential chair.

Mons. RECLUS moved, and Mr. HYDE CLARKE seconded a vote of thanks to the President; and that the Address be printed in the Journal of the Institute.

Carried by acclamation.

OBITUARY NOTICE OF THOMAS WRIGHT, M.A., HONORARY MEMBER.

The distinguished antiquary, Mr. Thomas Wright, was born at Ludlow in 1810, and received the rudiments of his education in the Grammar School there. Thence he proceeded to Trinity College, Cambridge, where he graduated; and where thus early in life he distinguished himself by researches in the precious MSS. of the libraries. One of his college friends was the late eminent Saxon scholar, John Mitchell Kemble, who in the preface to his translation of the Saxon epic poem, *Beowulf*, pays a high compliment to Thomas Wright. With J. O. Halliwell (now Phillippis), the great Shakespearean scholar, he also became intimate, and their friendship was lasting. In some early publications, such as the "*Reliquiæ Antiquæ*," in two vols., they were associated.

On quitting Cambridge he at once made choice of his way of life. He dedicated himself to literature, and, coming direct to the metropolis, entered on the arduous career of authorship. On the whole, his early career was successful. He supported himself by his pen, and won a reputation which gained for him many and valuable friendships. Guizot appreciated his worth, and

secured for him at an early age the distinction of being one of the Corresponding Members of the French Institute.

In 1843 he joined Mr. Roach Smith in founding the British Archæological Association, and this was the beginning of many active steps taken in the interests of archæology which should be remembered with gratitude.

The names of Mr. Wright's principal works will be familiar to all our Members. For the Percy, the Caxton, and Early English Text Societies, and of the Roxburgh and Warton Clubs, he did fine editorial work, while, by more popular books, he gave impetus to the study of the treasures of the past. To the general public he is best known by "The Celt, the Roman, and the Saxon," which passed through three editions; "England under the House of Hanover," 1848; "Popular Superstitions of England," 1845; "Domestic Manners and Sentiments in England during the Middle Ages;" "Womankind in Western Europe," "The Life of Gillray;" and beyond all in respect of popularity, his "History of Caricature and the Grotesque in Literature and Art." It may be interesting to add that it was at the special request of Napoleon III. that he translated the Imperial "Life of Julius Cæsar" into English.

In 1853 Mr. Wright became a member of the Ethnological Society of London, and in 1857 was elected secretary, in succession to Mr. Richard Cull.

In 1858, and again in 1862, 1864, 1865, 1866 and 1868, he served as one of the Secretaries of the Section of Geography and Ethnology in the British Association.

In 1860 it was resolved by the Council of the Ethnological Society that Mr. Wright's labour on their behalf had become so onerous as to demand assistance, and Dr. Hunt was accordingly appointed as his colleague.

At the Cambridge meeting of the British Association in 1862, and afterwards before the Ethnological Society, he read an account of the human remains found in the excavations at Wroxeter, which were, as he pointed out, of three classes: 1st, the regular cemetery of Roman Uriconium, outside its walls; 2nd, remains found within the city, probably of persons massacred when it was taken and destroyed; 3rd, other skeletons interred within the walls, which presented a peculiar obliquity of shape, which he attributed to artificial deformation. By 1863, Dr. Hunt had formed the resolution of establishing the Anthropological Society of London, and had accordingly retired from his association with Mr. Wright in the Ethnological Society, his place being supplied by Mr. Francis Galton. Dr. Hunt showed his respect for his late colleague, however, by immediately proposing Mr. Wright's election as one of the

twenty-five Honorary Members of the Anthropological Society, and as it is the good fortune of this Institute to inherit every graceful act of both of the Societies of which it is composed, Mr. Wright became by that fact an Honorary Member of the Anthropological Institute on its formation.

In 1865 Mr. Galton retired from the Secretaryship of the Ethnological Society, and was succeeded by Mr. D. W. Nash, Mr. Wright continuing in office.

On 21st November, 1865, he read before the Society an important paper on the true assignation of the bronze weapons, &c., supposed to indicate a bronze age in Western and Northern Europe, in which he attacked the received opinions with earnestness and great learning, seeking to show that leaf-shaped bronze weapons bear a resemblance amounting to identity with the swords figured on Roman coins and monuments. That he never saw cause to withdraw these opinions appears from his repetition of them in his latest work, entitled "*Uriconium*," though a paper in reply was read on 13th March, 1866, by Sir John Lubbock and Mr. F. Lubbock.

On 24th April, 1866, Mr. Wright read a paper on the intercourse of the Romans with Ireland, in answer to an article which had appeared in the *Anthropological Review*, iv. 180 (not 266, as wrongly indexed). Mr. Wright maintained the existence, during the whole period of the Roman power in Britain, of Roman settlements in the north-east of Ireland.

On 26th June, 1866, Mr. Wright exhibited to the Society a drawing of a bronze dagger, said to have been found at Wroxeter.

In 1869 Mr. Wright and Mr. Nash both retired from the office of secretary, and Mr. Wright was elected Vice-President, an office which he continued to hold till the Ethnological Society was merged in this Institute.

It will thus be seen that Ethnological Science owes him, besides the important papers to which reference has been made, twelve years' services as Secretary of that Society, as well as editorial work throughout the whole of its Second Series of Transactions, forming seven volumes.

It may be added that Mr. Wright was for many years an Honorary Member of a Society with which this Institute has always enjoyed a close alliance—the Royal Society of Literature.

In 1837 he was elected a Fellow of the Society of Antiquaries of London, and retired from the Society in 1876, having in the meanwhile made some valuable contributions to *Archæologia*.

His long and useful life closed on Sunday, December 23rd, 1877, and his funeral took place at Brompton Cemetery on the 29th of the same month.

The titles of his books fill many pages of Allibone, and of his

contributions to current literature no record has been kept. He was simply indefatigable in production, and it has been truly remarked that "no Englishman of our times has so intelligently treated so many different departments of literary research."

Most of the accounts of his life which have appeared omit mention, for example, of his "Christianity in Arabia," and of "Two volumes of Vocabularies illustrating the general Archaeology and History of our Country, and the forms of elementary education and of the languages spoken in our country from the 10th to the 18th century; and Feudal Manuals of English History," compiled at the request and at the exclusive cost of Mr. Joseph Mayer.

His services to literature, in branches which are certainly not those that lead to fortune, were not ungracefully acknowledged in his later years by an annual grant from Her Majesty's Civil list.

Mr. William Sawyer happily describes him as "one of the most indefatigable of authors and kindest of men. In antiquarian circles the name of Thomas Wright is known and respected all over the world; the work he did is valued; the impulses he gave are felt."

Dr. Charles Pickering died in Boston, March 18th. He was born in Susquehanna, co. Pennsylvania, November 10th, 1805. He was a graduate of Harvard, in the class of 1823, and of the Medical College of 1826. He was a member of the American Academy of Arts and Sciences, and of the American Philosophical Society, was the Naturalist of the U.S. exploring expedition under Commodore Wilkes in 1838—1842, practised medicine in Philadelphia for several years, and afterwards removed to Boston. Besides the report of his exploring expedition, he was the author of several valuable scientific publications.

The exploring expedition returned, leaving certain countries that required to be visited to complete the survey of the globe. Accordingly, after remaining a little over a year at Washington, Dr. Pickering set out alone in 1843 for Malta, Egypt, down the Red Sea to Zanzibar, and thence to Bombay, returning after an absence of twenty-two months. He then prepared and published his work on "The Races of Man and their Geographical Distribution."—*American Naturalist*.

The scrutineers then brought in their report of the ballot, and the following gentlemen were declared to be duly elected to serve for the ensuing year:—

President.—John Evans, Esq., D.C.L., F.R.S.

Vice Presidents.—Prof. Geo. Busk, F.R.S.; Hyde Clarke, Esq.; Maj.-Gen. A. Lane Fox, F.R.S.; Francis Galton, Esq., F.R.S.; Sir J. Lubbock, Bt., M.P., D.C.L., F.R.S.; Prof. Rolleston, M.D., F.R.S.

Directors and Hon. Secs.—E. W. Brabrook, Esq., F.S.A.; W. L. Distant, Esq.; J. E. Price, Esq., F.S.A.

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On the motion of Mr. BRABROOK, seconded by Mr. R. B. MARTIN, thanks were returned to the scrutineers, and retiring members of the Council.

A special vote of thanks to the retiring Hon. Sec., Capt. HAROLD DILLON, was moved by Mr. F. G. HILTON PRICE, and seconded by Mr. Hyde Clarke.

Carried unanimously.

ANTHROPOLOGICAL MISCELLANEA.

NOTE ON ESKIMO SKULLS.

IN the last number of the Journal of the Anthropological Institute (November 1877, page 142) my friend Dr. Rae alludes, on my authority, to "the wonderful difference in form exhibited between skulls of Eskimos from the neighbourhood of Behring Strait, and of those inhabiting Greenland, the latter being extremely dolichocephalic, whilst the former are the very opposite, brachycephalic; the natives of the intermediate coast, from the Coppermine River eastwards, having mesocephalic heads."

As possibly Dr. Rae's impression of what was really said at the lectures to which he refers in such kind terms was occasioned by some ambiguity on my part, I should be glad to be allowed to amend the statement without delay, otherwise the passage quoted, and some others in the same communication, might lead to the erroneous supposition that I had myself examined and exhibited specimens of Eskimos both from Behring Strait and the Coppermine River.

The subject under discussion was the cephalic index, its mode of measurement, ethnological value, &c., and the well-known but curious fact was pointed out that the two extremities of the almost continuous hyperborean land, which are separated by the Atlantic Ocean, are inhabited respectively by one of the longest and one of the shortest headed races known, the Greenlanders and the Lapps; and it was further stated that, as far as our very scanty information allows us to judge, the people of the extensive intermediate land tracts present various degrees of intermediate condition of head formation. With regard to the natives of the northern shores of America a considerable series of Greenlanders was shown, exhibiting the most extreme form of dolicocephaly, and other very marked characters; others were shown from the western side of Baffin's Bay in which the dolicocephaly was slightly diminished, but for evidence of the altered characters, and still greater diminution of length (though far from amounting to true "brachycephaly") seen in the Eskimos of the western shore of North America, the valuable "Thesaurus" of Dr. Barnard Davis was quoted. It will, however, be observed that this rectification of a term does not in the least affect Dr. Rae's general argument. I hope before long to lay before the Institute some observations upon the Osteology of the Eastern

Eskimos, founded upon materials in the Museum under my care, not yet fully described, including a fine series of skulls obtained in the "Pandora" expedition of 1876, and presented by Sir Allen Young.—W. H. Flower.

ANTHROPOLOGY BY DR. PAUL TOPINARD. Translated by Robert T. H. Bartley, M.D. (London: Chapman and Hall 1878).

ANTHROPOLOGY is to many both a new word and a new science. It is also a much misunderstood word and a science whose great advance has been somewhat unobserved in this country. As one test of progress in the other sciences, we may compare the articles on them in the present and former editions of the "Encyclopædia Britannica," but this cannot be done for Anthropology, that word appearing for the first time in the present edition only.

The first Ethnographical Society of which there is any record was instituted in Paris in 1800, under the title of the Société des Observateurs de l'Homme, and died of inanition during the war. The second was instituted in London in 1838, and was of an exclusively philanthropic character (page 16). The term ethnography is somewhat synonymous with ethnology, which is defined by M. Littré as treating of the origin and distribution of peoples, and ethnography of their description; ethnology again is to be considered as a section of anthropology, to which it bears about the same relation as the term Social Morality does to Morality.

The progress of Anthropology has been greatly retarded by the different views which are held as to the proper aim and scope of the science. Amongst the many different subjects it embraces, there was and often is a tendency to enhance the one above the other. The physical anthropologist often regards the prehistoric worker as an antiquarian only, whilst the former is sometimes simply looked upon in the light of a demonstrative anatomist, and thus repulsion and disintegration are frequently produced in the place of attraction and cohesion. Two degrees are admitted: the *Positive*, or collection of ascertainable facts, and the *Comparative*, or natural method of deduction from those facts. A third, or *Superlative*, has been attempted to be introduced, viz., a metaphysical and spiritualistic one. The field of study even when defined by the rigorous method of science is still vast and the workers too few, though, as M. Topinard remarks, "Naturalists, physicians, men of letters, artists, philosophers, lawyers, diplomatists, travellers, archæologists and linguists, are all carrying the material wherewith to build the edifice," page 13.

The first collective work upon Anthropology in this country was that of our father Prichard in 1813, and its subsequent editions. This was shortly followed by "Lectures on the Natural History of Man," by Lawrence. Under the auspices and by the energy of the Anthropological Society, two excellent translations of standard works were given: the "Introduction to Anthropology" of Waitz, and the "Lectures" of Carl Vogt. A short time since a trans-

lation of Oscar Peschel's "Races of Man" was published, and now the present work forms the last of a series, which will perhaps afford any English reader as good an introduction to Anthropology as exists in this language for any science.

M. Topinard is a Physical Anthropologist. He considers the science under two aspects: "Anthropology proper, which has to do with man and his races, and Ethnology, which treats of nations." His book is occupied with the study of the former, which he divides into two parts: (1) The study of man considered as a zoological group. (2) The study of human races as divisions of that group. It is unnecessary for our purpose to either accept or object to this classification. Every author must methodise according to the exigencies of his treatment of a subject, and the longer one studies the labours of the systematists, or attempts that work himself, the sooner he must realize the artificiality of all classifications, the at present unavoidable indefiniteness of terms. The first portion of the work treats "Of man considered in his ensemble, and in his relation with animals." The question was ably discussed in this country by Prof. Huxley (*Man's place in Nature*), 1863, and was a more venturesome undertaking then in London than is the case at the present day in Paris. It is a question solely for the consideration of the biological anthropologist, and much of the hue and cry which greeted Prof. Huxley's demonstration came from that section whose denial or assent could in no way affect the problem to be considered, and whose cheers and counter-cheers are at present simply a distraction to the real worker. When man is placed in his proper zoological position, his real divergence from the nearest allied form can be best appreciated. Brain then shows a great difference of degree though not of kind. "That which distinguishes man from the brute is the quality and quantity of the organ—the quality and quantity of the product," page 163. The question of the zoological affinity of man is nearly always considered as implying that of his derivation. Perhaps logically we should rejoice at such scientific progress, but in other branches of zoology, nearest allied species are constantly and laboriously being grouped together, without the derivative process being even given a moment's thought. The two questions can be kept apart, if necessary, and can also be done as easily as differentiating the process of making money, and disposing of it properly afterwards.

The second portion of the volume is devoted to the consideration "of the races of mankind." Here the physical method of comparison is again pursued. Even for purposes of classification two systems of research are open: "Anatomical, to be studied in the laboratory; and external, to be observed on the living subject." The first M. Topinard considers the truly Anthropological one, and in Paris at least it is now being thoroughly worked out. When we learn that for some time the laboratory of M. Broca has been enriched with brains preserved in alcohol which have been sent from all parts of the world, we may have some idea of the amount of material being collected, and of the care bestowed on research we cannot do better

than quote our author: "When anyone has the advantage, such as we have had, of seeing M. Broca at work in his laboratory, comparing all the measurements upon thousands of skulls, rejecting those upon which he appeared to set especial value, recommencing upon, and examining entire series which he regarded as at all doubtful, a thought crosses the mind. Is it certain that everywhere else so much scrupulous care has been bestowed?" page 225. At the conclusion of the second part, a question is discussed which we believed had fulfilled Mr. Darwin's prophecy, and died "a silent and unobserved death." "Is the human family composed of genera, of species, or of varieties?" M. Topinard replies that if we agree to the specific characters of the different forms grouped in the genera "Ursus" and "Bos" we must logically apply the same division to man. But does the same necessity arise for this specific differentiation in both cases? What are species and genera but terms in the catalogue we are making of the animal world? the one equal to the title of a book, and the other to the number of the shelf on which it is placed. M. Topinard defines three types of man as specific, but what is to prevent them from being again sub-divided? The deadly specific upas tree would grow larger and larger, and would afford a good roost for systematists; whilst under its shadow Anthropology would wither. It can be compared to the beauty of the first days of a creed, when all is hope and energy; then come scholastic definitions, which prove in time to have a greater fascination than the original doctrine. Prof. Huxley has separated five good types, and it may perhaps safely be prophesied that that arrangement will eventually be accepted as the basis of all future arrangements, in the same manner as Dr. Sclater's zoological areas are considered at the present time.

The Origin of Man is the title of the last and shortest division of this excellent manual. It is a résumé of the views which are now held by most anthropologists upon the subject, excepting some differences upon points of detail. The land that produced Lamarck should have been the first to have greeted Darwin. Truth must eventually conquer, and M. Topinard concludes rightly, that "if we were to boast of our genealogy and not of our actions, we might indeed consider ourselves humiliated," p. 533. The principal fault to be ascribed to the translator is the nature of his preface. Surely it was unnecessary to record that he did not endorse all the views of the author, or that he had an entire belief in the authenticity of the Mosaic Record. In the first case the reader simply procures the work to learn the views of M. Topinard, and the second statement will only be valuable when the public are anxious about the matter. Some slight improvements may be made in a subsequent edition. "The brain thinks" (p. 2.) is not a happy expression, nor is such a sentence as the "sedentary" life of the beaver or the ant (p. 3) to be commended for zoological clearness or accuracy.

Thanks are however due to both publisher and translator for issuing in this country a work that can only be considered as a distinct gain to the science of Anthropology.

W. L. D.

Mr. Grant Allen is anxious, for a scientific purpose, to obtain definite information with regard to the perception of colour amongst different races of men; and would be greatly obliged if missionaries, travellers, anthropologists, and others who have been brought into contact with savage life could furnish him with answers to the following questions:—

- (1.) What is the race to whom your answers refer?
- (2.) How many colours can they distinguish?
- (3.) Can they distinguish between blue and green?
- (4.) Can they distinguish between blue and violet?
- (5.) Can they distinguish any mixed shades, such as mauve, lilac, orange, and purple?
- (6.) For how many colours have they names in their language?
- (7.) Have they separate names for green and blue?
- (8.) Have they separate names for blue and violet?
- (9.) How many colours do they discriminate in the rainbow?
- (10.) What pigments do they employ in personal decoration or in ornament?
- (11.) Have they a separate name for each pigment?
- (12.) Have they separate names for any colour for which they have no pigment?

Answers should be sent to Mr. Allen, Broad Street, Lyme Regis, Dorset.

ANTHROPOLOGICAL GLEANINGS. Compiled by W. L. DISTANT.

"A Calendar of the Dakota Nation," by Brevet Lieutenant-Colonel Garrick Mallery, U.S.I., *Bulletin U.S. Geol. and Geog. Survey*, vol. iii, No. I, April 1877. "The chart presented with this paper is ascertained to be the calendar of the Dakota nation, extending over the seventy-one years, commencing with the winter of A.D. 1799, 1800. The copy from which the lithograph was taken is traced on a strip of cotton cloth, in size one yard square, which the symbols almost entirely fill. This seems to be a unique attempt amongst these people to establish a chronological system. Picture-writing on hides or bark is very common, but is usually only the biography of a chief, or the history of a particular war, whilst "painted robes" are now manufactured for sale to the wealthy amateur.

The duplicate from which the copy was immediately taken was in the possession of Basil Clément, a half-bred interpreter, living at Little Bend, near Fort Sully, Dak., who professed to have obtained information concerning the chart and its symbols from personal inquiries of many Indians, and whose dictated translation of them, reduced to writing in his own words, forms the basis of that given in the paper. Intercourse with missionaries and other whites may perhaps have given the Dakotas some idea of dates, and awakened a sense of want in that direction, especially as the Calendar begins at a time coinciding with the first year of the present century.

Col. Mallery considers these symbols, and also the existence of Shamanism as evidence of a North Atlantic affinity.

"The Twana Indians," by Rev. M. Eells, *Bull. U.S., Geol. and Geog. Surv.*, vol. iii, No. I, April 1877. This paper is in the form of answers to questions in the "Ethnological directions relative to the Indian Tribes of the U.S., prepared under direction of the Indian Bureau, by Otis T. Mason, Part 1, "Man;" Part 2, Surroundings or "Environment;" Part 3, "Culture." Mr. Eells was a missionary among these Indians, and it is impossible to summarize his full information on all the above subjects, especially under the Section Religion: *a.* "Objects of Reverence and Worship;" *b.* "Holy Places and Objects;" *c.* "Ecclesiastical Organization;" *d.* "Sacred Rites;" *e.* "Myths;" *f.* "Belief." The last is treated at length, and contains much sociological information. One paragraph may be quoted. "Their idea of heaven formerly was that it was below, and a place for good hunting and fishing for good Indians. They had no hell, as they supposed wicked persons would be turned into a rock or beast. Now most of them believe the heaven and hell of the Bible to be true, I think."

"Methods of making Stone Weapons," by Paul Schumacher. *Bull. U.S. Geol. and Geog. Surv.*, vol. iii, No. 3, May 1877. During rambles among the remnants of the Pacific coast aborigines, the author had the good fortune to obtain from the last arrow-maker of the Klamath Indians (since deceased) an exhibition of the mode of making stone weapons. For the manufacture of arrow and spear-points, knives, borers, adzes, &c., chert, chalcedony, jasper, agate, obsidian, and similar stones of conchoidal fracture are used. The rock is first exposed to fire, and, after a thorough heating, rapidly cooled off, when it flakes readily into sherds of different sizes under well-directed blows at its cleavage. To work the flakes into the desired forms, tools are required, of which descriptions and figures are given.

(This is translated by the author from an earlier publication in "*Archiv für Anthropologie*," vol. vii, p. 263, *et seq.*).

The method of straightening the arrow-shaft, as learnt from living witnesses among the aborigines of California and Oregon is also described.

"Remarks concerning two Divisions of Indians inhabiting Arizona, New Mexico, Utah, and California." By Dr. Edwd. Palmer. *American Naturalist*, vol. xi, p. 735.

Having travelled extensively through New Mexico, and examined the so-called ancient graves and mounds, and studied the Indians now living in that region, Dr. Palmer has arrived at the conclusion that this region was formerly inhabited by two divisions or classes of Indians, distinguishable by their mode of burial—one burning, the other inhuming, the corpses—and by their dwellings and domestic arts. These are considered as the Aztecs, or crema-

tionists, and the Toltecs who buried their dead. Dr. Palmer has little faith in the old Spanish historians, and considers that when the Aztecs were represented as offering up human sacrifices to their gods, they were only observing the custom of burning their dead, and that the former story was used for the purpose of making "religious capital." In the same region are to be found graves which do not belong to the Indians now living there, and containing either the bodies or ashes of human beings, whose epoch we have no means of determining.

"The Seven Towns of Moqui," by E. A. Barber. *American Naturalist*, vol. xi. p. 728. Moqui is situated in Arizona, in long. 110° to 111° west, and latitude 35° to 36° north. They were first visited by the Spaniards in 1540. The names of the seven towns are subject to shades of variation in pronunciation at different times, because the tribe possesses no written language by which they might be permanently recorded, yet the majority of these almost unpronounceable names can be recognised in the most ancient Spanish chronicles. Mr. Wm. H. Jackson, the photographer of the U. S. Geol. Survey returned to the Moqui Pueblos during the spring of 1877, and whilst there an actual census was taken. This showed that the percentage of males is larger than that of females, and Mr. Barber thinks this fact may be accounted for by the unadventurous and pacific character of the men, being thus less liable to accident. Polygamy is rare among them and polyandry unknown. Further analysis shows that the mortality is much greater than the increase, and the Moquis are rapidly passing away.

Capt. Hildyard of the "Dacia," in early life, when cruising in a schooner in the Pacific, was cast ashore on one of the Pellew Islands. Here he and his shipmates were detained for many months in honorable captivity, the native king being desirous of securing some civilised men as allies in his wars with the neighbouring islanders. While detained on the island they discovered that the Prime Minister was a fellow-countryman. He was an Irishman, having some fifty years before, when he was about twenty years old, been left on the island by a whaler. He had almost forgotten his native language. In complexion and habits he was as one born on the Pellew Islands, and he evinced no desire to return to a more civilised portion of the world. Thos. Brassey, M.P., "Round the world in the Sunbeam." *Nineteenth Century*, vol. ii, p. 776 (1877.)

An interesting little brochure, entitled *The Dieyrie Tribe of Australian Aborigines*, by Mr. S. Gason, which was published at Adelaide some time back, has newly reached us. The tribe, which is said to be fast dying out, inhabits a district some 630 miles north of Adelaide, through which Cooper's Creek runs. Mr. Gason furnishes an account of the manners and customs and character of the race, the country they inhabit, their rites, ceremonies, and superstitions, and their social usages and laws, as well as a catalogue of animals,

weapons, and ornaments found among them. He also adds examples of the construction of the dialect spoken by them, together with a complete vocabulary. *Academy*, Nov. 10, 1877 p. 450.

"On the Mammalia of North Greenland and Grinnell Land," by H. W. Fielden. "*Zoologist*," 3rd Ser. vol. i, p. 314 (1877). Under the designation of "*Homo Grœnlandus*," Capt. Fielden treats of "The most northern known inhabitants of our globe, the Eskimo that dwell along the coasts of North Greenland between Cape York, the northern extremity of Melville Bay, and the Great Humboldt glacier, which discharges into Smith Sound on its eastern side, between the seventy-ninth and eightieth parallels of north latitude." The most northern settlement of these Eskimo at the present day is Etah, on the northern shore of Foulke Fjord, from whence the hunters of the tribe travel along the Greenland coast as far north as the southern edge of the Humboldt glacier, a little beyond the seventy-ninth degree. A few miles south of Cape Beechey were found circles of tent stones (as were also found elsewhere), and near at hand a small heap of rock crystals and flakes, showing where the artificers in stone had been making arrow or harpoon heads. Close under Cape Beechey, and about six or seven miles from the eighty-second parallel, Capt. Fielden came across "the most northern traces of man that have yet been found." They consisted of the framework of a large wooden sledge, a stone lamp in good preservation, and a very perfect snow-scraper made out of a walrus-tusk. The author states, as the result of his observations, "that along the shores of Smith Sound, Kennedy Channel, Hall Basin, and Robeson Channel, three degrees north of the present extreme range of the Etah Eskimo, the most northern race of man known, there are to be found not only traces of Eskimo wanderings, but many proofs of former permanent habitations in places where under present climatic conditions it would be impossible for even the 'Arctic Highlanders' now to exist."

"South Slavonians and Rajpoots," by Sir Henry Summer Maine, "*Nineteenth Century*," vol. ii, p. 796 (1877).

It would be impossible to summarise this valuable paper. Sir Henry Maine commences with the remark, "Nothing would be of higher value to scientific archæology than any addition to our opportunities of observing societies of Aryan race still remaining in a condition of barbarism. The closer examination of the Turkish provinces in Europe, which many causes have recently made practicable has already recovered for us a nearly perfect example of one of the oldest institutions of the Aryan race—probably, with the exception of the Family, the very oldest. The House Community is not peculiar to the territories and dependencies of the Turkish Empire, since it is found among all the South Slavonian populations, but it occurs in greatest completeness whenever men of the South Slavonian stock are now or have been lately under Mussulman government, or where, like the Montenegrins, they have had their whole history

determined by incessant struggles with Mussulman power. Sir H. Maine describes the House Community as an extension of the Family, an association of several and even of many related families, living together substantially in a common dwelling or group of dwellings, following a common occupation, and governed by a common chief. "The North Slavonians, or Russians, have the Village Community. The House Community belongs specially to the South Slavonians, the Croatsians, Dalmatians, Montenegrins, Servians, and the New Slavonian Bulgarians. On the other hand, in India, the Joint Family and the Village Community are often found side by side, sometimes indeed bound together by complex common relations." The House Communities and Natural Families, which make up the bulk of South Slavonian society, are constantly running into one another, the community dissolving into a mere collection of families, the family expanding into the community, and both groups occasionally dissolve in other ways. From a survey of Slavonian usages as a whole, there is little doubt that the natural development of the House Community would be into the Village Community.

"A Cruise in the New Hebrides," by Leo. Layard. "*Field*," February 2nd, 1878.

At "Pele," where the Rev. W. Gordon (afterwards murdered in Erromanga) had resided for a few months, some barbed wooden-pointed arrows were obtained. These, to the great astonishment of Mr. Layard, were found to be *feathered*, which he remarks is the only instance of feathered arrows met with in all the collection he had seen from the South Sea Islands.

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CORRIGENDA ET ADDENDA.

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Page 155, line 34, for "not," read "now."
 „ 158, „ 15, for "least," read "last."
 „ 159, erase line 6.

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